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Domestic Communications—Satellite Facilities

PROPOSED ESTABLISHMENT BY NON-GOVERNMENTAL ENTITIES

FEDERAL COMMUNICATIONS COMMISSION

[47 CFR Part 25]

[Docket No. 16495; FCC 72-229]

ESTABLISHMENT OF DOMESTIC COMMUNICATIONS—SATELLITE FACILITIES BY NONGOVERNMENTAL ENTITIES

Memorandum Opinion and Order

In the matter of establishment of Domestic Communications—Satellite Facilities by Nongovernment Entities.

1. In response to the Report and Order issued in this proceeding on March 24, 1970 (22 FCC 2d 86) and the concurrently issued notice of proposed rule making (22 FCC 2d 810), the Commission has received eight applications for domestic satellite systems and a number of applications for earth stations only. We have also received comments and reply comments on the applications and rule making issues by the applicants and other interested parties.

2. Applications were filed by the following:

SYSTEM APPLICANTS

The Western Union Telegraph Co. (Western Union).
Hughes Aircraft Co. and four telephone operating companies of GTE Service Corp. (Hughes/GTE).
Western Tele-Communications, Inc. (WTCI).
RCA Global Communications Inc. and RCA Alaska Communications, Inc. (RCA Globcom/RCA Alascom or "the RCA applicants").
Communications Satellite Corp. and American Telephone and Telegraph Company (Comsat/A.T. & T.).
Comsat.
MCI Lockheed Satellite Corp. (MCI Lockheed).
Fairchild Industries, Inc. (Fairchild).

EARTH STATION APPLICANTS

Hawaiian Telephone Co.
Twin County Trans-Video, Inc.
TelePrompTer Corp.
LVO Cable, Inc., and United Video, Inc.
Phoenix Satellite Corp.

3. The rule making called for comment and suggestions as to the policies the Commission should follow to resolve possible economic or technical conflicts among applicants; the appropriate initial role of A.T. & T. in the domestic field; earth station ownership, access, and interconnection; and procurement. The 1970 Report also requested parties to address the questions of whether domestic satellite facilities should be capable of providing service to Alaska and Hawaii in the interest of national unity, and whether public broadcasting and other educational interests should have access to domestic satellite facilities on special terms, and, if so, on what terms.

4. The applications and comments of the parties have been analyzed by the Commission's staff, with technical assistance from the National Aeronautics and Space Administration (NASA). The Chief of the Common Carrier Bureau has recommended to the Commission a proposed Second Report and Order in this proceeding (the attachment hereto).

5. Before reaching any determinations in this matter, we have decided to afford applicants and other parties (who have filed in response to the 1970 Report and Notice) an opportunity to be heard orally and to comment on the recommendations of the staff. Our action therefore does not reflect any predisposition by the Commission with respect to the resolution of the issues involved. The basic thrust of the staff recommendations is summarized below. We will also indicate those aspects participants in the oral argument are requested particularly to address.

I. SUMMARY OF STAFF POSITION

5a. In brief, on the question of the number and nature of the space segments to be authorized initially, the staff discusses three possibilities:

a. One space segment (selection either of one applicant or a consortium of all pending applicants found qualified);

b. Selection of some of the pending system applicants on the basis of the comparative merits of their proposed systems and other relevant public interest considerations; or

c. Some form of "open entry" for all applicants except those, if any, found disqualified on policy grounds, with appropriate conditions to protect the public interest.

6. The staff is of the view that it would be technically feasible to accommodate all of the in-orbit satellites proposed by the applicants, with certain technical adjustments in their proposals, but that the total initial space segment capacity of the eight proposed systems substantially exceeds the present and foreseeable communications market in the next few years for domestic satellite services.[1] It recommends against attempting to select one or a few of the proposed space segments on the ground that this would be inconsistent with the policy objectives of encouraging diverse entities to exploit the potential advantages of this technology to achieve new communications services, as well as expansion of the scope and flexibility of existing services. It would militate against the goal of creating a situation where competition would determine how the most efficient survive, where innovative services are given a reasonable opportunity to attract a market, and where the development and demonstration of different technologies would be fostered to the extent practicable. The staff also maintains that selection of one type of space segment or a few applicants on the merits of their system proposals would entail further proceedings, thereby delaying the inauguration of any domestic satellite service to the public, and would be of little assistance in an area of dynamic technology with the uncertainties and difficulties of definitive resolution in advance of an operational demonstration of the proposed facilities and public response to the service offerings.

7. With respect to "open entry," the staff discusses two possibilities. Under Open Entry Option I, the Commission could adopt a policy permitting authorization of all of the facilities proposed by all of the system applicants who are found qualified and are willing to proceed subject to the conditions recommended by the staff. The staff believes that an open entry policy of this nature might cause some to drop out or to endeavor to consolidate their proposals, and could result in the establishment of a system or systems that might not achieve the desired public interest objectives. The staff further points out that under FCC v. RCA Communications, Inc., 346 U.S. 86 (1953) and other applicable judicial authorities, competition—while relevant—is not the sole pertinent consideration; the Commission must weigh the potential benefits and detriments to the public interest and determine that on balance, competition will serve some beneficial purpose in furtherance of communications policies. It also notes that some of the applicants (e.g., Comsat, GTE, Western Union, the RCA applicants, and A.T. & T.) are presently engaged in providing essential common carrier services to the public, and that the potential impact on such services is a pertinent factor for Commission concern. In addition, the staff asserts that a policy of unrestricted entry with unlimited facilities poses a danger of fragmenting the market for potential satellite services to such an extent that most carrier entrants might fail to come even remotely close to recovering their costs; and might result in survival only of a carrier such as A.T. & T., which itself or through affiliates, has massive resources unrelated to the domestic satellite market. This would defeat the policy objectives indicated above.

8. Under the alternative recommended by the staff, Open Entry Option II, the Commission could adopt a policy of open entry to all pending and future applicants who are found qualified and meet certain conditions, but require or strongly encourage consolidation in a common space segment those who have proposed the same or very similar satellite technology and authorize minimum facilities to each space segment initially pending a stronger public interest justification for additional capacity to any space segment or participant in a common space segment. The staff indicates that common space segments would reduce the required investments and overheads of participants considerably (e.g., by reducing the number of in-orbit and ground-spare satellites, by permitting shared use of earth stations in some instances, etc.),[2] and might afford other

[1] The system applicants have proposed a total of 20 in-orbit satellites, with a combined capacity of about 600 transponders. A transponder is capable of handling, for example, one color television channel, or about 600–900 voice circuits, or a one-way digital stream of about 35 Mb/s.

[2] Satellites intended primarily for the use of the broadcast networks would not be authorized until there is a firm customer commitment to a particular licensee or applicant.

advantages to the public and the applicants without hampering their operations.

9. It is contemplated by the staff that each participant in a common space segment would be licensed to own a proportionate share of the satellites on a cost-sharing basis, with authorization of a single managerial licensee to perform tracking, telemetry and control (TT&C) and other managerial functions. Each participant could use its share of the satellite capacity in whatever manner it desires (including, in the case of Hughes, for private CATV network operations), provided that such operations are not inconsistent with any of the conditions set forth in the proposed Second Report and Order or the provisions of applicable law. No participant would have any commitment to the initial common venture beyond its proportionate share of the funds required to procure and launch the initially authorized satellites (plus the ground spare if needed), and of the costs of managerial services (e.g., TT&C) during the active life of such satellites. Any participant could at any time, subject to prior Commission approval, sell its share to any remaining participant or to an independent entity. Each participant could be authorized its own earth station facilities to operate with its share of the satellites, subject to a requirement for shared use of earth stations in some instances (see paragraph 14 below).

10. Open Entry Option II, as envisaged by the staff, would afford applicants who are found qualified and meet other conditions an opportunity to proceed as follows. MCI Lockheed and Fairchild could pursue their applications as proposed. Subject to the conditions indicated below, Western Union, and Hughes/GTE could proportionately own a common Space Segment A on a cost-sharing basis, with an option to WTCI and the RCA applicants to share in this space segment or to proceed independently with different satellite technology.[3] Similarly, Comsat and A.T. & T. could proportionately own a common Space Segment B on a cost-sharing basis.

11. Any applicant grouped in Space Segments A or B above could elect instead to have its pending proposal considered pursuant to such further proceedings as might be deemed necessary by the Commission to enable the requisite public interest finding, or to take advantage of the opportunity for sharing ownership while reserving the right—either simultaneously or in the future—to seek additional or independent space segment facilities for good cause shown. Choice of the latter courses would require a stronger public interest justification than those now pending before the Commission, and might require further proceedings. Moreover, the policies and conditions elsewhere specified in the proposed Second Report and Order would in any event apply, unless good cause were shown for an exception. Processing priority would be accorded to applications submitted in accordance with the provisions summarized in paragraphs 8–10 above.

12. Any authorization to Comsat, A.T. & T., or GTE—whether pursuant to paragraph 10 or paragraph 11 above, would be upon the following special conditions. Comsat would be given the option to elect between limiting itself to the provisions of satellite services to A.T. & T. under lease or of entering the field as a supplier of satellite services to domestic entities other than A.T. & T. pursuant to tariffs, but not of proceeding in both capacities (see paragraph 79 of the attachment). If Comsat should elect to serve entities other than A.T. & T., it could share ownership in Space Segment B with A.T. & T. and act as manager for the jointly owned space segment or for one independently owned by A.T. & T. If A.T. & T. should opt to acquire its space segment facilities by lease from Comsat, it will be required to show that the costs are no greater than if it owned facilities jointly with Comsat or acquired equivalent facilities by other available means (paragraph 79 of the attachment). GTE would be required to make showings as to the effect of the proposed arrangement (whether under Open Entry Option II or its pending application) on the efficiency, quality, and costs of interstate switched telephone service (MTT); and as to the kinds of data it intends to gather and report as a basis for the evaluation and efficiency of the proposed operations compared to its continued reliance on existing interexchange facilities of A.T. & T. (see paragraphs 97–99 of the attachment).

13. It has been urged by various parties that each of the system applicants should be disqualified on policy grounds. These contentions are summarized and discussed at some length in the attachment (paragraphs 82–119, and paragraphs 1–63 of the appendix to the attachment). Without attempting to recapitulate the reasoning of the staff, we note that it is against outright disqualification of any system applicant at the outset but has recommended certain conditions. Any authorization to a satellite equipment supplier would be conditioned upon the existence or creation of a separate corporate entity to engage in the communications service aspect (attachment, paragraphs 84–86). Any authorization to Hughes would be upon the further condition that it afford CATV customers the option of owning receive-only earth stations, and permit reasonable access to the earth station facilities by common carriers sharing the same space segment and offering program transmission service to other CATV program originators (attachment, paragraphs 88, 126–127). The conditions relating to GTE have already been indicated in paragraph 12 above. A.T. & T. would be limited, at least in its initial system proposal for the use of satellites, to those of its services that are essentially monopoly services, such as interstate message toll and wide area telephone services (attachment, paragraphs 100–104). Any domestic authorization to Comsat would be limited to service to the contiguous 48 States and conditioned upon a prohibition against establishing domestic earth stations in any overseas State or other area served by Intelsat facilities (attachment, paragraphs 105–118, particularly paragraph 114).[4] It would also be required to form a separate corporate subsidiary to engage in any domestic satellite venture, and limitations would be placed on the amount of equity capital acquired for Intelsat purposes that Comsat could devote to financing such domestic subsidiary (attachment, paragraphs 115–116).

14. With respect to earth station ownership, the staff recommends that users, such as local broadcasters and CATV systems, be afforded the option of owning receive-only earth stations, subject to a requirement for reasonable access by other local entities desiring receive-only services that can be received at such facilities (attachment, paragraphs 120–127). Independent ownership of transmit-receive earth stations would not be permitted in any geographic area reasonably proximate to a transmit-receive earth station of the carrier furnishing the transponders, except for good cause shown (attachment, paragraphs 128–129). The staff further recommends that a common carrier participant in a joint space segment be required to share (i.e., proportionately own on a cost-sharing basis) a common transmit-receive earth station, in lieu of being authorized an independent facility, in any area where another participant in the same space segment has proposed a transmit-receive earth station in reasonable geographic proximity. However, each such space segment owner could be authorized an individual transmit-receive earth station in any area where no other participant in the same space segment has proposed a transmit-receive earth station in the vicinity, or for other good cause shown (attachment, paragraphs 130–131).

15. On the question of access to earth stations and terrestrial interconnection (attachment, paragraphs 133–142), the staff states a belief that carriers should own, to the extent practicable, the facilities used to provide end-to-end service to their customers, and that any construction of new facilities required for access to earth stations should be undertaken by the satellite system carrier (or other entities using the earth station facilities). Where it is necessary or desirable to use

[3] In the event that the RCA applicants should elect to proceed independently with different technology, such authorization would be upon condition that these applicants participate in Space Segment A to provide service to Alaska until such time as any independent RCA space segment is operational, and upon the further condition that they make a reasonable showing that their existing services to the public would not be adversely affected.

[4] This condition would not preclude Comsat from providing network program transmission service to overseas points in the event it should elect to serve entities other than A.T. & T. and obtain the network business, provided that the earth station facilities in such overseas areas are owned and operated by local entities.

the terrestrial facilities and services of the Bell System or another terrestrial carrier, this should be furnished under terms which would promote the concept of end-to-end service by the satellite system carrier. The staff recommends that any domestic satellite authorization to A.T. & T. or other carrier be conditioned upon a requirement that it make available to all other authorized earth station carriers the terrestrial facilities and services required to deliver their satellite services to their customers, on reasonable and nondiscriminatory terms and conditions and: (a) In the case of local loop service, at charges not to exceed the interstate tariff rates applicable to such loop, and (b) in the case of an interexchange channel at some other junction point on the landline facilities under a leased channel arrangement, at charges computed on a basis that is no less favorable than the basis used for computing interstate charges to the carrier's customers between the points involved or on the same terms that service between such points is made available to other carriers. Thus, A.T. & T. would also be required to submit on behalf of the Bell System, prior to consideration of its application, a full description of the kinds of arrangements that will be made available to other satellite system or earth station licensees to meet their interconnection requirements (attachment, paragraphs 140–141, and see paragraph 99 relating to GTE). Common carrier space segment and earth station licensees would be subject to general requirements that they permit reasonable and nondiscriminatory access to such facilities by means of earth stations and/or terrestrial interconnection facilities authorized by the Commission to other carriers and users (attachment, paragraph 142).

16. The staff is of the view that one or more domestic systems should be authorized to serve the States of Hawaii and Alaska (attachment, paragraphs 148–152). The Intelsat aspect of this matter has been coordinated with the Department of State. The staff also recommends that applicants proposing to serve these States be required to submit certain additional information as to how they plan to meet their needs (attachments, paragraphs 149, 150). The assignment of orbital arc locations would be by further order of the Commission. Assignments for satellites utilizing 4 and 6 GHz frequencies would be separated by 3° (or allow for intervening satellites separated by 3°), unless good cause is shown for wider separation (attachment, paragraph 152a).

17. For the staff's recommendation as to the terms of access, by public broadcasting and other educational interests, see attachment, paragraphs 157–162. The staff notes that there is a well-established national policy, incorporated in legislation, which encourages and makes it lawful for common carriers to provide free or reduced rate interconnection services to noncommercial broadcast network and educational institutions. While these statutes do not operate automatically to require such treatment, they make it possible for the Commission to prescribe preferential rates to educational entities, as well as for carriers to file tariffs offering such rates on their own initiative. The staff is of the opinion that the Commission presently lacks sufficent information to initiate any requirement as to common carriers, but should entertain specific proposals by carriers or users for the prescription of preferential rate classifications. Noncarrier applicants (such as Hughes and Phoenix), who have offered free access, would be expected to implement the proposals made in their applications (see attachment, paragraph 162). Finally, as to procurement, the staff concludes that the Commission has authority to prescribe procurement rules requiring competitive bidding. However, it recommends against exercising such authority in the present circumstances under an open entry policy.

II. Areas the Participating Parties are Requested to Address Particularly in Oral Argument

18. Those participating in the oral argument are requested to treat particularly the following issues:

a. Whether the Commission should adopt a policy of limited open entry as proposed by the staff or, in the alternative, a policy of unrestricted entry.

b. Whether the Commission should require Comsat to elect between owning and operating a space segment dedicated to the use of A.T. & T. or owning and operating satellite facilities for the purpose of furnishing services to persons other than A.T. & T.

c. Whether A.T. & T. should be limited in its use of satellite facilities to the furnishing of its noncompetitive services (i.e., message toll telephone and wide area telephone services).

d. Whether the Commission as a matter of policy should require licensees of satellite facilities to provide free service to educational entities and, if so, on what basis of eligibility; or whether, as proposed by the staff, the provision of free or reduced rate services to such entities should be left to future ratemaking proceedings in accordance with the applicable provisions of the Communications Act or to the initiative of the licensees choosing voluntarily to provide such free or reduced rate service.

Order. 19. *Accordingly, it is ordered,* That the Commission will hear oral argument on the attached proposed Second Report and Order recommended by the Chief, Common Carrier Bureau, commencing on May 1, 1972 in the Commission meeting room in Washington, D.C. Parties desiring to participate in the oral argument[5] shall file a notice of intent on or before March 29, 1972, indicating the nature of the interest and the amount of time requested. Parties with similar interests are encouraged to select a single representative to present their viewpoint. The amount of time allocated to each participating party and the order of presentation will be designated by further order of the Commission, after consideration of the notices of intent. Written comments on the staff recommendations may be submitted by interested parties on or before April 19, 1972. These comments should address matters not covered in previous pleadings or filings.

Adopted: March 15, 1972.

Released: March 17, 1972.

Federal Communications Commission,[6]

[SEAL] Ben F. Waple,
Secretary.

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[5] Those entities eligible to participate will be limited to applicants and parties who have filed applications and/or comments in response to the 1970 Report and Notice.

[6] Commissioners Johnson and Wiley concurring in the result; Commissioner H. Rex Lee not participating.

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I. BACKGROUND

1. The background of this proceeding is fully set forth in the Report and Order (1970 Report, released on March 24, 1970 (22 FCC 2d 86, 35 F.R. 5356). In brief, the Commission there concluded that the communications satellite technology offers sufficient promise of making a substantial contribution to the Nation's communications system to warrant appropriate steps towards the authorization of communication satellite facilities to be used solely for domestic purposes (22 FCC 2d at 88–90). The Commission emphasized that coordination with Intelsat would be required, and that domestic satellite facilities will not be authorized unless they are fully consistent with U.S. obligations to, and continued full support of, the global system (22 FCC 2d at 87, 94). For the reasons set forth in Appendix C to the 1970 Report, the Commission concluded that it possesses legal power under the Communications Act of 1934 and the Communications Satellite Act of 1962 (particularly section 102(d)) to authorize domestic satellite and earth stations facilities to any entity—either common carrier or noncarrier or some combination of both—as the national public interest requires (22 FCC 2d at 86, 128–133). However, the Commission was unable to determine on the basis of the record and other information then before it, which included two studies conducted by the executive branch, "whether domestic communications satellite opportunities would be more fully and effectively developed through one or more multipurpose systems, specialized systems, through a combination of both, or through an essentially 'open entry' policy" (22 FCC 2d at 93).

2. The Commission decided that it would be assisted in making such policy determinations if potential applicants took the initiative in submitting concrete system proposals for the Commission's consideration (22 FCC 2d at 93). The Commission stated (22 FCC 2d at 93–94):

> Thus, we will consider applications by all legally, technically, and financially qualified entities proposing the establishment and operation of domestic communications satellite systems designed to provide the capability for multiple or specialized communications services. Applicants may propose the rendition of such services directly to the public on a common carrier basis or by the lease of facilities to other common carriers, or any combination of such arrangements. Applicants may also propose private ownership and use or the joint cooperative use of the system by the several owners thereof. [Footnote omitted.] Applicants may further propose the shared use of some facilities by different systems, or a division in the ownership of various system components (e.g., user ownership of earth stations to afford direct access to the space segment of a common carrier or cooperative system).

Pending the adoption of application forms and rules governing technical standards, the Commission specified in the 1970 Report and appendix D thereto the procedures for filing and contents of applications, and technical criteria (22 FCC 2d 98–103, 133–139).[1]

3. The 1970 Report further stated in paragraph 20 (22 FCC 2d at 94):

> In considering whether the public interest would be served by a grant of applications, in whole or in part, the Commission will be guided, of course, by the policies and provisions of the Communications Act and other relevant statutes, as well as pertinent judicial authorities. The basic touchstone for decision is our mandate set forth in Section 1 of the Communications Act to regulate "interstate * * * commerce in communication by wire and radio so as to make available, so far as possible, to all people of the United States a rapid, efficient, nationwide * * * wire and radio communication service with adequate facilities at reasonable charges * * *." In short, we believe that we can best render the public interest judgments as to what system or systems are to be authorized in the context of specific proposals. Parties are thus expressly advised that while the Commission will welcome submission of applications and give them all the most serious consideration, the extension of this opportunity to file, and the expenditure involved in preparing an application, do not in any way indicate that the application will be granted in whole or in part.

4. The Commission concurrently issued a notice of proposed rule making (22 FCC 2d 810), and consolidated the proposed rule making with this proceeding (22 FCC 2d at 95–97, 104). The rule making concerns the policies to be followed in the event of technical or economic conflicts among the applications, the appropriate initial role of American Telephone & Telegraph Co. (A.T. & T.) in the domestic satellite field, procurement policies, access to earth stations and terrestrial interconnection (see paragraphs 23–38 of the 1970 Report, and paragraphs 2–5 of the notice of proposed rule making). By a further notice of inquiry and proposed rule making released on September 25, 1970 (25 FCC 2d 718), the Commission expanded the rule making issues to include consideration of possible use of other frequency bands, in addition to the 4 and 6 GHz bands,[2] in light of U.S. preparation for, and the outcome of, the World Administrative Radio Conference (WARC) for Space Telecommunications (Geneva, 1971).

5. In the 1970 Report the Commission said that in giving public notice of the first proposal accepted for filing, it would specify a time period for the filing of applications by other applicants desiring to have their proposals considered in this proceeding in conjunction with the first proposal, as well as dates for the filing of comments on the rule making issues (22 FCC 2d at 98). By Public Notice issued on August 7, 1970 (FCC 70–865), the Commission gave notice that the first system proposal, submitted on July 30, 1970, by the Western Union Telegraph Co. (Western Union), had been accepted for filing. That public notice afforded potential applicants desiring consideration with the Western Union proposal an opportunity to indicate how much time would be necessary for submission of their proposals. Upon consideration of the responses, the Commission established a cutoff date of December 1, 1970 for the filing of such applications,[3] and dates for comments and reply comments (FCC 70–953). At the requests of interested entities the original filing times were subsequently extended by various orders in Docket No.

[1] With respect to the technical criteria (set forth in appendix D to the 1970 Report), the Commission indicated that applicants might also submit "alternative proposals reflecting what would be requested if there were different technical constraints and showing how the alternative would better serve the public interest" (22 FCC 2d at 98).

[2] In this Second Report, the following abbreviations are used for frequencies indicated below:

2 GHz	2500–2690 MHz
4 GHz	3700–4200 MHz
6 GHz	5925–6425 MHz
7 GHz	6625–7125 MHz
12 GHz	11.7–12.2 GHz
13 GHz	12.75–13.25 GHz
14 GHz	14–14.5 GHz
18 or 20 GHz	17.7–21.2 GHz
30 GHz	27.5–31 GHz

[3] The Commission afforded the national television networks an additional 15-day period beyond the general cutoff date within which to apprise the Commission as to whether they intended to apply for a domestic system (FCC 70–953, paragraph 3).

16495,[4] until the final schedule was as follows: [5]

Applications for domestic satellite systems to be considered in Docket No. 16495	Mar. 15, 1971
Statement of intent by television networks	Mar. 29, 1971
Applications by various specified entities for earth stations to operate with systems of others	Apr. 13, 1971
Comments on applications and rule making issues	May 12, 1971
Reply comments	July 12, 1971

6. By March 15, 1971, the Commission received applications for eight separate domestic satellite systems from the following applicants (some of whom filed joint or interrelated proposals):

(1) Western Union.

(2) Hughes Aircraft Co. and four telephone operating companies of GTE Service Corp. (Hughes/GTE).[6]

(3) Western Tele-Communications, Inc. (WTCI).

(4) RCA Global Communications, Inc. and RCA Alaska Communications, Inc. (RCA Globcom/RCA Alascom or "the RCA applicants").

(5) Communications Satellite Corp. and A.T. & T. (Comsat/A.T. & T.).[7]

(6) Comsat.[8]

(7) MCI Lockheed Satellite Corp. (MCI Lockheed).

(8) Fairchild Industries, Inc. (Fairchild).[8]

In addition, timely filed applications for earth stations only (to operate with one or more of the foregoing systems) were received from the following:

(1) Hawaiian Telephone Co. (see footnote 6 above).

(2) Twin County Trans-Video, Inc.

(3) TelePrompTer Corp.

(4) LVO Cable, Inc., and United Video, Inc.

(5) Phoenix Satellite Corp.

On March 29, 1971, the ABC, CBS, and NBC networks filed a joint statement as to their present plans in the domestic satellite field (see paragraphs 34–35 below). Comments and reply comments on the applications and rule making issues were filed by the applicants and other interested persons.[9] Subsequently, on October 28, 1971, the Office of Telecommunications Policy (OTP) submitted a letter of comment which was placed in the record of the proceeding.

7. Before discussing the various threshold policy questions posed by the applications, rule making issues and pleadings of the parties, we shall indicate the general nature of the various applications filed for consideration in this proceeding and the statements of the broadcast networks. The comments of the parties are summarized at some length in the appendix hereto, and more briefly in the ensuing policy discussion (paragraphs 40–167 below).

II. The Applications and Broadcast Network Statements

A. System Applications

8. The system applications are grouped below according to the number of transponders proposed per satellite. It should be noted that some of the applicants contemplate a much larger number of earth stations in the event their proposals are authorized, but have presently applied for only a few major or prototype earth stations.

1. Proposed Systems With 12 Transponder Satellites

9. Two applicants, Western Union and Hughes/GTE, propose spin-stabilized 12-transponder satellites (similar to the Canadian Telsat satellite being developed by Hughes) with a Thor-Delta launch vehicle. Both propose to use frequencies only in the 4 and 6 GHz bands for the space segment. Both propose illumination of the 48 contiguous States (CONUS) and spot beam coverage of Hawaii and Alaska.

Western Union. 10. Western Union proposes a multipurpose system. It has applied for:

(a) Three in-orbit satellites at 95°, 102°, and 116° west longitude (with ground spare);

(b) Seven transmit-receive earth stations (45-foot antennas) to be located near New York City, Los Angeles, Chicago, Atlanta, Dallas, Portland (Oreg.), and in Hawaii;

(c) Six receive-only earth stations (33-foot antennas) in the States of California, Oregon, and Washington (with another five contemplated for West Coast television program distribution); and

(d) Microwave and cable terrestrial interconnection facilities.

Western Union plans to use eight transponders to augment its own present and planned general communications services to the public. In addition, it hopes to provide network program transmission service on 10 transponders, to provide message service to Hawaii and Alaska (240 two-way voice channels to each State), and to use 10–16 spare transponders in orbit for backup and for video transmission service on an "available" or "interruptible" basis. It also discusses potential use of the system for Mailgram service. The proposal estimates an initial investment of approximately $92 million, and annual revenue requirements of approximately $27 million.

Hughes/GTE. 11. Hughes/GTE propose a hybrid common carrier-private system. They have entered into a contract whereby Hughes would build, own, and maintain two 12-transponder spin-stabilized satellites in orbit (with a third spare on the ground), and lease eight transponders in one satellite to GTE (including backup rights to eight transponders in a second satellite) for 7 years at an annual rental of $900,000 per transponder. GTE proposes to use these transponders to meet some of the intercity communications requirements (switched-voice and private-line) of customers of the four GTE operating companies who have applied for earth stations. Hughes does not intend to operate as a common carrier. It proposes to use the remaining satellite capacity as a private venture for distributing programing to CATV systems and for use by the Corporation for Public Broadcasting (CPB). Hughes has offered CPB free access to two transponders on the primary satellite (with backup rights to two transponders on the second satellite), as well as free access to all Hughes earth stations. The remaining transponders on the primary satellite and those on the second satellite (when not needed for backup purposes) would be used by Hughes for distributing programing it intends to procure and sell to CATV systems. The Hughes objective is to make available to the CATV viewing public a wide diversity of special-interest programs.

12. Hughes has applied for: [10]

(a) Two in-orbit satellites at 100° and 103° west longitude, and a third orbital location at 97° west longitude for future growth (with a ground spare);

(b) Two transmit-receive earth stations at Califon, N.J. (89-foot and 42-foot antennas) and San Juan Capistrano, Calif. (98-foot antenna); and

(c) Seven receive-only earth stations (35-foot nontracking antennas) to be located at Elmira, N.Y.; St. Petersburg, Fla.; Eugene, Oreg.; Los Angeles, Calif.; New York, N.Y.; Atlanta, Ga.; and Denver, Colo.

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[4] Order released November 6, 1970 (FCC 70–1198); Order released November 17, 1970 (FCC 70–1207); Memorandum Opinion and Order released December 2, 1970 (FCC 70–1238); Order released February 18, 1971 (FCC No. 64311); Order released February 23, 1971 (FCC No. 64461); Order released February 25, 1971 (FCC 71–197); Order released March 19, 1971 (FCC No. 65299); Order released April 7, 1971 (FCC No. 65811); Order released May 27, 1971 (FCC No. 68541); Order released July 9, 1971 (FCC No. 69971). In its Memorandum Opinion and Order released on December 2, 1970 (FCC 70–1238), the Commission stated that the cutoff date for the filing of applications, while a needed schedule, was "not designed to limit us to considering only those proposals filed within that period or to restrict applicants to the confines of their proposals as originally tendered" (paragraph 6).

[5] The State of Alaska was granted leave to file its comments and reply comments at later dates. The Department of Justice and the National Association of Educational Broadcasters have requested, and are hereby granted, acceptance of late filings. Pursuant to leave granted by the Commission, the State of Hawaii filed comments on October 21, 1971.

[6] The GTE operating companies are: General Telephone Co. of California, General Telephone Co. of Florida, General Telephone Co. of Indiana, Inc. and Bethel and Mt. Aetna Telephone and Telegraph Co. In addition, another GTE operating company, Hawaiian Telephone Co., filed separately for an earth station in Hawaii.

[7] The Comsat/A.T. & T. applications filed on Mar. 3, 1971 replaced previous joint applications submitted by them on Oct. 19, 1970.

[8] The Fairchild applications were originally filed under the name of Fairchild Hiller Corp.

[9] The record also contains a large number of letters and other material submitted by interested persons who did not file formal comments.

[10] Hughes expects that "several hundred" receive-only earth stations would ultimately be required as the system develops. Hughes has amended its application to delete an earlier request for terrestrial microwave interconnection facilities to the transmit-receive earth stations. It now proposes to locate its program operating centers at or near such earth stations and to use cable for interconnection.

13. The GTE companies have applied for:

(a) For transmit-receive earth stations (98-foot antennas) to be located in Pennsylvania, Indiana, Florida, and California; and

(b) Microwave facilities to interconnect earth stations with existing terrestrial routes.

14. Hughes estimates an initial investment of approximately $49 million (increasing as receive-only stations—estimated to cost about $110,000 each—are added), and first-year operating expenses of about $9½ million (also increasing as its operations expand).[11] In addition to the annual lease charge of $7.2 million to Hughes, the GTE companies estimate an initial investment of approximately $26 million in earth station and interconnection facilities, and annual revenue requirements of about $16 million.

Western Tele-Communications, Inc. 15. WTCI proposes a multipurpose system using spin-stabilized 12-transponder satellites, with a Thor-Delta launch vehicle (or possibly an Atlas/TE 364–4 if available at lower cost). It proposed, prior to the 1971 WARC,[12] that six transponders would operate at 4 and 6 GHz and six at 12 and 13 GHz, affording CONUS coverage and spot beam, 4 GHz coverage of Hawaii and Alaska. Subsequently, WTCI amended its applications to propose only 4 and 6 GHz, to add spot beam coverage of Puerto Rico, and to revise its estimates as to investment costs and annual revenue requirements. WTCI has applied for: [13]

(a) Two in-orbit satellites at 113° and 116° west longitude (with a spare on the ground);

(b) Four representative transmit-receive earth stations (60-foot antennas at 4–6 GHz) located near Los Angeles, Denver, Chicago and New York City;

(c) One representative receive-only earth station at Desert Springs, Nev. (20-foot antenna at 4 GHz); and

(d) Microwave and cable terrestrial interconnection facilities.

WTCI states that basically its aim will be to serve wideband users up to and including video (e.g., both CATV and broadcast network program distribution), to provide interconnection for its proposed terrestrial network for specialized common carrier services (private line, including data transmission), and to offer transponder capacity to other common carriers under 7-year contracts at $62,500 per transponder per month. WTCI originally estimated that the initial investment for the facilities applied for would be about $67.7 million, with annual revenue requirements of approximately $22.4 million. Revised estimates were submitted with its amendments.

RCA Globcom/RCA Alascom. 16. The RCA applicants propose a multipurpose system to operate in the 4 and 6 GHz bands, or alternatively in the 12 and 14 GHz bands. They propose to use 12-transponder satellites, or satellites of higher capacity, to be either spin-stabilized or three-axis stabilized depending on the contractor bid response. They have not yet decided whether the launch vehicle would be a Thor-Delta, an Atlas/TE–364–4, or an augmented Thor-Delta. The satellites would afford broad-beam coverage of Alaska and CONUS, and spot beam coverage of Hawaii and Puerto Rico.[14]

17. The RCA applicants have applied for:

(a) Three in-orbit satellites at 125°, 121°, and 114° west longitude (with a spare on the ground); [15]

(b) Thirteen transmit-receive earth stations (with antennas ranging from 32 feet to 98 feet) to be located near New York City, Washington, D.C., Chicago, Denver, Los Angeles, San Francisco, and Seattle in CONUS; Anchorage, Fairbanks, Juneau, Ketchikan, and Prudhoe Bay in Alaska; and Honolulu in Hawaii; [16] and

(c) Terrestrial microwave interconnection facilities in Alaska.[17]

18. RCA Alascom plans to integrate the satellite system facilities with its existing and proposed terrestrial facilities in Alaska. RCA Alascom proposes to provide voice and data services within Alaska, and between Alaska and CONUS and Hawaii, including message toll telephone and intercity private line services for civilian, military, and other Government use. RCA Alascom also proposes to provide instructional, educational and network television and radio transmission services within Alaska, including programs originated in CONUS plus instructional and educational television programs generated in Alaska. RCA Globcom proposes to offer analog private line services among the areas served in CONUS and between them and Hawaii,[18] and digital private line and switched services within CONUS. RCA Globcom also plans to use the system between its New York City, Washington, D.C., and San Francisco terminals in connection with its overseas service. The applicants state that their 13 earth stations are well positioned to provide private line services for the Government. They also note that the initial earth station network could be significantly augmented by the installation of earth stations to provide broadcast and CATV program transmission services, and a motion picture distribution service. They further state that the system could be expanded to accommodate the requirements of Western Union and GTE. It is estimated that the initial investment and annual revenue requirements would approximate $90 million and $40 million, respectively, and that these estimates would increase to about $197 million and $100 million, respectively, for the expanded system contemplated by 1978.

2. Proposed systems with 24 transponder satellites

19. Two applicants, Comsat/A.T. & T. and Comsat, propose spin-stabilized 24-transponder satellites (deriving 24 channels from the Intelsat IV type of satellite through cross-polarization techniques), with an Atlas-Centaur launch vehicle. Both applicants propose to use only 4 and 6 GHz frequencies for commercial communications purposes, but to conduct experimental tests at higher frequencies (Comsat/A.T. & T. at 20 and 30 GHz, and Comsat at 12 and 13 GHz). The Comsat/A.T. & T. system proposes broad-beam coverage of Conus with spot-beam coverage of Alaska (if another entity provides earth stations there).[19] Comsat system, in addition to broad-beam coverage of Conus and spot-beam coverage

[11] These costs are for the communications system only and do not include costs associated with program acquisition and program operation centers.

[12] While the United States proposed an up-link allocation at 12.75–13.25 GHz, the WARC did not adopt this proposal. Instead it adopted an upband at 12.5–12.75 GHz for region 2, shared with fixed and mobile, and an upband at 14–14.5 GHz shared with existing services in the current table of allocations. By Public Notice issued on July 29, 1971 (FCC No. 70479), domestic satellites applicants were advised that those who included 12.75–13.25 GHz frequencies in their applications might wish to consider amendments in light of the outcome of the WARC. The U.S. proposal also included an upband at 2.15–2.2 GHz, whereas the WARC made provision for an upband at different frequencies (2,655–2,690 MHz). See footnote 2 above.

[13] WTCI proposes, but has not applied for, a third orbital location at 119° W. longitude for a future satellite. It also contemplates possible addition of 26 transmit-receive earth stations for network program distribution and many additional receive-only earth stations for broadcast network and CATV program distribution, as well as transportable transmit-receive earth stations.

[14] In the event that the RCA applicants decide upon a 12-transponder spin-stabilized satellite, they propose to use the Hughes Teisat satellite. If three-axis stabilized satellites are to be used, potential suppliers include RCA (Astro Electronics Division) and General Electric Co. The RCA applicants have recently filed amendments proposing as an alternative a higher capacity satellite to be launched by an augmented Thor-Delta or comparable launch vehicle with a payload capability of approximately 1,890 pounds (as compared to the 1,550-pound payload capability of the present Thor-Delta). This alternative also contemplates the use of 2-GHz frequencies to operate with 7-foot diameter earth stations in Alaska (costing approximately $7,000 each) for instructional television. This alternative entails revised estimates of investment costs and annual revenue requirements.

[15] RCA contemplates that two satellites would be placed into orbit initially and the third when needed. At that time the original in-orbit spare would be moved from 121° to 118° west longitude for continued use as an in-orbit spare.

[16] RCA Alascom proposes to acquire earth station facilities near Anchorage either through the addition of another antenna at the existing Bartlett earth station used with the Intelsat system (for which antenna it has applied) or, if that is not feasible, by a new earth station in the vicinity of Anchorage. It also incorporates by reference its pending application for an earth station at Lena Point near Juneau.

[17] In CONUS and Hawaii the applicants propose interconnection by arrangement with connecting terrestrial carriers.

[18] It indicates that customers could use such private line channels for voice, data, alternate or simultaneous voice data, and other private line services including private line video service.

[19] A.T. & T. has recently indicated an intent to amend to include spot-beam coverage of Hawaii.

of Alaska, could provide spot-beam coverage of Hawaii and Puerto Rico.

Comsat/A.T. & T. 20. The Comsat/A.T. & T. proposal is for a system dedicated to A.T. & T.'s use. They have entered into an agreement whereby Comsat would procure, own, and maintain three satellites in orbit for exclusive lease to A.T. & T., with a fourth spare on the ground. Comsat has applied for:

Three in-orbit satellites at 94°, 104° and 119° west longitude.

A.T. & T. has applied for:

(a) Five transmit-receive earth stations (100 foot antennas) near New York City, Los Angeles, Chicago, Atlanta and Dallas; and

(b) Terrestrial microwave interconnection facilities.

A.T. & T. proposes to use the system to augment its terrestrial systems in accommodating voice, picturephone, data, and other services, to provide long-haul digital channels, to assist in handling peak loads of the Bell System (e.g., time zones, seasonal), to afford additional diversity in any service-restoration need, and to experiment with 20 and 30 GHz technology. In these respects, no charges different from those in its terrestrial tariffs are contemplated. A.T. & T. is further willing to lease transponders to other carriers.[20]

21. Comsat's estimated initial investment is about $140 million, and its estimated annual lease charge to A.T. & T. is about $33.7 million. Apart from the space segment lease charge, A.T. & T.'s estimated investment (including earth stations and connecting microwave facilities, but not multiplexing equipment) is about $96 million. A.T. & T. estimates that its annual costs would be about $65 million after the first year. It states that such annual cost is nearly comparable to the annual cost of equivalent terrestrial facilities, $60 million (insofar as equivalent terrestrial value can be readily determined), and that the cost differential is "offset by significant uses to which a value cannot readily be assigned—such as the enhanced network capability for rapid restoration and to meet sudden demands, and the advanced satellites system research which may yield great savings in future generations of satellites" (A.T. & T. application, p. 25).

Comsat. 22. Comsat has also proposed a multipurpose system of its own to serve all other carriers and users. It has applied for:

(a) Three in-orbit satellites at 99°, 114° and 124° west longitude (with a fourth spare on the ground);

(b) Four transmit-receive earth stations near New York City and Los Angeles (97-foot and 42-foot antennas), and near Juneau and Prudhoe Bay, Alaska (32-foot antennas); and

(c) Three receive-only earth stations (42-foot antennas) near Talkeetna, Alaska; Paumalu, Hawaii, and Cayey, P.R.

In the event that its proposed system is authorized and potential customers materialize, Comsat contemplates an initial nationwide complex of 132 earth stations (which might later be expanded to 174). It proposes to lease transponders to general common carriers (such as Western Union, GTE, etc.) under long-term, fixed-price contracts at $760,000 per transponder per year; to provide service to specialized common carriers; to provide program transmission service to broadcast networks, CATV and the Public Broadcasting Service (PBS); to provide data transmission services to educational institutions under the same terms applicable to PBS; and to provide intrastate and interstate public message and private line service to Alaska, as well as television program transmission service to Alaska. It also hopes to attract other noncarrier users and, as demand materializes, to introduce new services such as: Multidestination, one-way data channels for the distribution of news, educational material, financial, medical, and scientific data; service to off-shore installations with small earth stations to meet oil and mining requirements; and service to industry and Government. Comsat would prefer that terrestial interconnection facilities be provided by other carriers on a long-term, fixed-price carrier-to-carrier basis.[21] Its estimated initial total investment for the proposed 132-earth station system is about $244 million. The estimated annual average revenue requirement is about $69 million.

3. Proposed System With 48 Transponder Satellites

23. MCI/Lockheed proposes a 48 transponder, three-axis stabilized satellite with an antenna mounted on an equipment shell which would always point toward the earth, and solar cells on two large (47- x 8-foot) unfurlable panels which would rotate so as always to face the sun. The launch vehicle is a Titan III D Agena or, in the alternative, a Titan III C. Each satellite would have 24 transponders operating in the 4 and 6 GHz bands and 24 transponders operating in the 12 and 14 GHz bands (see amendments filed on October 8, 1971). Frequency reuse would be accomplished through cross-polarization techniques. The satellite would illuminate Conus with beams at 4/6 GHz and 12/14 GHz and would provide spot beam 12/14 GHz coverage to Alaska and Hawaii.

24. MCI Lockheed, which proposes a multi-purpose system, has applied for:

(a) 2 in-orbit satellites at 114° and 119° west longitude (with a ground spare);

(b) 5 transmit-receive earth stations (4/6 GHz, 32-foot antennas) located outside New York City, Los Angeles, Chicago, Atlanta, and Dallas;

(c) 17 earth stations (12/14 GHz, 32-foot antennas) located within the downtown areas of the cities listed in (b) above and in the downtown areas of Seattle, San Francisco, Denver, Kansas City (Kansas), New Orleans (two antenna locations), Cincinnati, Detroit, Boston, Washington, D.C., and Miami (two antenna locations); and

(d) Terrestrial microwave interconnection facilities for the 4/6 GHz earth stations.

Thus, five urban areas would be served both by a 4/6 GHz earth station located a number of miles outside the central city (ranging from 32.9 to 80.6 miles), and by a 12/14 GHz earth station located downtown. The other 10 urban areas would be served by 12/14 GHz earth stations in downtown locations at or near MCI Lockheed distribution centers. MCI Lockheed contemplates that for further distribution the system would interconnect with existing or proposed terrestrial common carrier systems, privately-owned microwave systems, cable systems, or other modes of local transmission.

25. Based on a market study conducted by Booz, Allen & Hamilton (Application, Vol. IV, Exh. IV), MCI Lockheed expects its primary initial market to consist of leased private line services (including data, voice and low-speed record message). Other potential services include television and radio program distribution, cable television distribution, electronic special delivery mail service, service to Hawaii and Alaska, occasional use services, the provision of carrier trunk lines, and educational services. MCI Lockheed proposes to make available for educational uses the equivalent of five television channels and access to its downtown earth stations, without charge for 5 years and at a fraction of its regular rates for the remainder of the satellite life (estimated at 10 years). For other users, MCI Lockheed proposes to charge rates that are not dependent upon the distance between earth stations, or so-called "distance insensitive" rates (e.g. $1,200 per month per 4 KHz duplex circuit regardless of distance, and proportional charges for other services depending on bandwidth). MCI Lockheed estimates an initial investment of about $169 million (with an additional $60 million investment over a 4-year period for further equipment and earth stations). The average annual revenue requirement over this 5-year period is estimated at about $68 million.

4. Proposed System With 120 Transponder Satellites

26. Fairchild, which is under contract to build NASA's Applications Technology Satellites (ATS) F and G, proposes to use a 3-axis stabilized satellite based largely upon the design and technology of ATS–F. Fairchild states that the satellite will have a large point-to-point transponder channel capacity made possible by the use of narrow beams and reuse of frequencies. It claims that each satellite would have 72 point-to-point, narrow beam transponder channels at 4 and 6 GHz to provide message service to six earth stations in Conus (12 trans-

[20] A.T. & T. originally indicated a willingness to discuss arrangements for providing program transmission service to the broadcast networks. Following the networks August 12, 1971, addendum to its stated requirements (see paragraph 35 below), A.T. & T. stated that it is not presently interested in providing such service via satellite.

[21] A.T. & T. and a GTE company have applied for microwave facilities to provide terrestrial interconnection to Comsat's earth stations near New York City and Los Angeles, but Comsat has been unable to agree with them on interconnection terms.

ponders to each),[22] and 24 additional narrow beam transponders at 4 and 6 GHz to provide message and television program distribution to Hawaii, Alaska, Puerto Rico, and the Canal Zone (6 to each). The same satellite would also have 22 transponder channels at 7 and 14 GHz for television program distribution in Conus, and an option of two 2 GHz transponders. By reusing the 4 and 6 GHz bands 8 times, and the 7 and 14 GHz bands twice, each satellite would provide a total of about 120 transponders.[23] The proposed launch vehicle is a Titan III C.

27. Fairchild has applied for:

(a) 2 in-orbit satellites at 104° and 115° west longitude (with a ground spare), and reservation of a third orbital location at 124° west longitude for future use;

(b) 6 transmit-receive (100 foot) earth stations near New York City, Los Angeles, Chicago, Atlanta, Dallas, and Portland, Wash. (the New York and Los Angeles stations would also have 35-foot antennas for television distribution); and [24]

(c) Microwave and cable terrestrial interconnection facilities.

28. In addition to voice circuits and television transmission channels, Fairchild's proposed system could provide digital data transmission and reception. In the event that its proposal (including television transmission service to Conus) is implemented, Fairchild would offer:

(a) Two free, noninterruptible satellite transponders to PBS for service in Conus;

(b) Free, shared use of television channels for "off shore" locations to public broadcast interests;

(c) Free, part-time use of two transponders to the medical community for the exploration of techniques to improve health care; and

(d) An option of free use of one or two transponder channels utilizing frequencies at 2 GHz for: [25]

(i) Instructional television to remote areas (e.g., Alaskan bush) for school or community use with a low cost terminal (estimated at about $2,000) to be provided by some one other than Fairchild, or

(ii) A message service to remote areas (e.g., Alaskan bush) where usage is minimal and low cost (about $25,000) earth stations are needed (and would have be provided by some entity other than Fairchild).

For commercial users Fairchild estimates that the average charge would be $30,000 per transponder per month with two satellites in orbit (one on standby) and $19,500 with three in-orbit satellites. Initial investment (including 3 satellites, 3 launch vehicles and support, 6 earth stations and appropriate terrestrial interconnection facilities) is estimated at approximately $220.8 million. The revenue requirement is estimated at about $91.2 million in the first year of operation and at about $47.8 million by the seventh year of operation.

B. APPLICATIONS FOR EARTH STATIONS ONLY

29. Hawaiian Telephone Co. (Hawaiian Telco) has applied for a 4/6 GHz transmit-receive earth station (45-foot antenna) at Pupukea, Oahu, Hawaii, and terrestrial microwave interconnection facilities. It states that the station could be used with Western Union's proposed system or any other domestic system that is economically viable for Hawaii. However, Hawaiian Telco takes the position that Hawaii should not be part of any domestic satellite system at this time. Should the Commission decide otherwise, then Hawaiian Telco desires to be the entity authorized to provide ground facilities in Hawaii. Its proposed station would be operated initially as a receive-only facility, but would have capacity for two-way message and television transmission service. Investment (including terrestrial microwave) is estimated at about $1.85 million, and annual operating expenses at about $.5 million.[26]

30. TelePrompTer Corporation (TelePrompTer) has applied for five 4 GHz receive-only earth stations (35-foot antennas) to be located at or near New York City, Los Angeles, St. Petersburg (Florida), Elmira (New York), and Eugene (Oregon). It is contemplated that the earth stations would operate with a system proposed by one of the pending system applicants, such as Hughes, and would be used for the reception and distribution of CATV programing produced by TelePrompTer and others. TelePrompTer estimates that the overall unit cost for a typical receive-only earth station would be about $110,000, with an annual operating cost of approximately $5,600 (prorating personnel costs between the earth station and the CATV system), and an annual depreciation charge of about $11,000.

31. Twin County Trans-Video, Inc. (Twin County) is the operator of a CATV system in the Allentown-Bethlehem area of Pennsylvania. It has applied for a receive-only station (35-foot antenna) near Allentown to receive in the 4 and/or 12 GHz bands and to be operated with one or more of the systems proposed in the pending systems applications. The station would be used for reception of CATV programing transmitted via domestic satellites, as selected by Twin County, for distribution over Twin County's CATV system. It estimates construction costs at $154,097, with annual operating costs of approximately $5,000 and an annual depreciation expense of about $15,410.

32. LVO Cable, Inc. (LVO Cable), an operator of CATV systems, and its wholly owned subsidiary, United Video, Inc. (United Video)—a miscellaneous common carrier, have applied for receive-only earth stations (35-foot antennas) to receive in the 4 and/or 12 GHz bands. LVO Cable has applied for three stations near Oklahoma City and Tulsa (Oklahoma), and near La Salle (Illinois). United Video has applied for two stations near Albuquerque (New Mexico) and Boise (Idaho). The applicants contemplate that the primary initial use of the earth stations would be to receive and distribute programing to local CATV systems, and that future services might include any nontelephone communications, including data transmission, that may be offered by satellite. They estimate that the cost of the five earth stations would come close to $800,000 with annual operating costs of about $5,000 per station and annual depreciation expense ranging from $15,410–$16,552 per station (depending on whether channel capacity is 6 or 7).

33. Phoenix Satellite Corporation (Phoenix) has filed a "prototype" application for a 4 GHz receive-only earth station (32-foot antenna) near Phoenix, Ariz.[27] The application is supported by the CBS Television Network Affiliates Association, the ABC Television Network Affiliates Association, and the NBC Television Network Affiliates Association (the Network Affiliates Associations). If the Commission should grant the Phoenix application, it is anticipated that other television broadcast stations would file for similar earth station facilities using this "prototype" application as a model. The three network affiliated stations in Phoenix, Ariz.,[28] have entered into a cooperative venture to establish a jointly owned and managed corporation, Phoenix, to apply for and operate the earth station. They propose that the licensees of two independent television stations in Phoenix and any future commercial television broadcast licensees in that area would be permitted to participate in ownership, or to use the services of the earth station on a nondiscriminatory basis without ownership participation. Public broadcasting stations could use the earth station without charge. The cost of the facilities to be owned by Phoenix is estimated to total some $135,000, with annual operating costs of some $6,000 and annual depreciation expense of about $13,500 or less. While the Phoenix investment includes a microwave tower for common use at the earth station, each user would otherwise supply its own terrestrial interconnection facilities—estimated to approximate $22,400 for each of four network affiliated stations (including the PBS affiliate). Each user would have access to a locked cubicle in a Phoenix building at the earth

[22] The channels for the New York and Los Angeles earth stations could be increased to 24 each by reducing service elsewhere.

[23] Fairchild proposes to use a 30-foot satellite antenna to provide 10 spot beams. It is contemplated that earth stations will operate at below average radiated power levels and that low power solid state transmitters will be used in the satellite.

[24] Fairchild anticipates that there would also ultimately be over 100 receive-only earth stations (25-foot antennas). See also footnote 34.

[25] Fairchild has proposed the use of 2.15–2.2 GHz (up link) and 2.5–2.55 GHz (down link). With respect to the up link frequencies see footnotes 2 and 12 above.

[26] GTE and its subsidiary, Hawaiian Telco, have recently filed a notice of intention to amend their respective applications to operate as a unit in serving Conus and Hawaii, providing message toll service as well as private line, data, television, and other broad band services between Hawaii and Conus.

[27] The station could be modified to operate in the 7 GHz band.

[28] KOOL Radio-Television, licensee of KOOL–TV, a CBS affiliate; Arizona Television Co., licensee of KTVK, an ABC affiliate; and KTAR Broadcasting Co., licensee of KTAR–TV, an NBC affiliate.

station, which would contain the user-owned equipment necessary to pickup the RF signal, convert it to video and transmit it via the user's microwave link to the user's studio. In the Phoenix area it is estimated that each network affiliate, including the PBS affiliate, would need two video channels[29] and that each of the two existing independent stations would need one video channel. Phoenix states that the facility would have sufficient capacity to permit up to two video channels to each of three unused television assignments in Phoenix if stations should materialize on these assignments.

C. JOINT STATEMENT OF THE COMMERCIAL TELEVISION NETWORKS

34. On March 29, 1971, the ABC, CBS, and NBC television network companies filed a joint statement as to their present plans in the domestic satellite field. In brief, the networks stated that they are negotiating with the system applicants[30] and "think it highly likely that program transmission requirements can satisfactorily be met through this approach at a cost considerably below that of current A.T. & T. program transmission rates."[31] They therefore intend to pursue such possibilities fully rather than to submit a separate application for domestic satellite facilities at this time. However, in the event that the analysis and negotiations now in progress do not lead to satisfactory arrangements, they request that an opportunity remain available for the submission of a separate system proposal by or on behalf of the network companies.

35. Noting that a resolution of the various policy issues in this proceeding may affect the number and type of satellite entities that will be available in final negotiations and influence the manner in which network service needs could be met, the networks urge the Commission to proceed as expeditiously as possible to act on the basic policy matters to be resolved in this proceeding. Despite such uncertainties, the networks indicated that in the interim they would press forward with their negotiations with the applicants. On April 20, 1971, after the pending system applications were filed, the networks furnished interested applicants a written statement of their requirements for a satellite program distribution system. On August 12, 1971, the networks distributed an addendum to their requirements. The networks state that they have been and will be evaluating proposals based on these initial and amended statements of requirements.

D. ESTIMATED REQUIREMENTS OF COMMERCIAL AND NONCOMMERCIAL BROADCAST NETWORKS

36. In essence, the network stated requirements are for nine fully backed up channels (three for each network), plus access to two additional channels for occasional use, up to five additional channels on Saturday (12 m. to 8 p.m.), and up to six more channels on Sunday (12 m. to 8 p.m.)—i.e., a total of 22 channels for regular and occasional use. They contemplate 151 earth stations, of which 29 would have transmit as well as receive capability. The major transmitting station would be in the New York City area, with Los Angeles as an alternative major transmission point. It is anticipated that there would be a trial period to test system performance in the Pacific time zone, running simultaneously with the landline distribution system for comparison purposes, within the 36-month period (from the issuance of FCC authorizations) the networks specify for completion of a nationwide system. Service to Alaska and Hawaii would be included in the nationwide system, but not in the Pacific time zone trial period.

37. The Corporation for Public Broadcasting (CPB) and the Public Broadcasting Service (PBS) have estimated that public broadcasting would require full-time use of two satellite transponders, fully backed up and nonpreemptible, plus access to a third transponder for 31 hours a week at specified hours for supplemental service and access for a maximum at 7 hours per week, subject to availability, for occasional service. They also desire access to and use of all earth stations (transmit and receive) serving commercial customers (e.g., broadcast and CATV), and access to satellite channels and earth stations to meet the needs of National Public Radio (NPR).[32] The terms on which CPB and PBS desire access to domestic satellite facilities are discussed in paragraph 154 and paragraphs 87–89 of the appendix.

III. ISSUES

38. The principal policy issues for Commission resolution at this time appear to be these:

A. Whether to adopt some form of "open entry" policy or to limit the number or nature of systems to be authorized.

B. Whether any of the pending system applicants should be disqualified on policy grounds, or have conditions placed on any authorization to protect the public interest.

C. What policy to adopt as to earth station ownership, access to earth stations, and interconnection with terrestrial facilities.

D. Whether Alaska and Hawaii should be served by domestic satellite facilities and, if so, by what system or systems.

E. Whether ETV and other educational interests should be permitted to use domestic satellite facilities on special terms and, if so, on what terms.

F. Whether to promulgate rules governing procurement.

39. Once these issues have been determined and the applications have been amended to conform to the policies and conditions adopted herein, we will consider each application on its individual merits and follow such procedures as may be necessary to resolve any remaining questions pertinent to the particular set of applications (e.g., coordination of earth stations and resolution of claims of interference with terrestrial facilities in the 4 and 6 GHz bands). Each applicant will, of course, be required to make a satisfactory showing that it is legally, financially, and technically qualified, and that a grant of its proposal would otherwise serve the public interest, convenience, and necessity.

IV. DISCUSSION AND CONCLUSIONS

40. Although the previous report issued by the Commission in 1970 was not designed to be a statement of policy, it did identify certain considerations and objectives which the Commission regarded as significantly relevant for the guidance of prospective applicants. To this extent, that report has provided a frame of reference for the thinking and planning of the applicants. It will be useful, therefore, to review briefly the report in these respects as a prelude to considering the policy issues presented by the applications.

41. In the 1970 report, the Commission recognized that satellites can be readily adapted to complement existing long-haul point-to-point transmission services; and that they offer unique promise as an economical means (compared to terrestrial techniques) of providing point-to-multipoint services, such as program transmission. The Commission expressed the view that the greater potential may lie in the use of satellites for the development of new services and markets. In this connection, the Commission noted that technological advances in terrestrial transmission facilities over the years have reduced the cost of point-to-point transmission and this trend is likely to continue into the

[29] Phoenix indicates that each commercial network affiliate would have one fixed-tuned video receiver for network interconnection, and one video receiver remotely tuned across the entire 4 GHz band to be used as a backup during the network hours and to gain access to such nonnetwork programing as the affiliate has a contract to receive.

[30] The networks stated that all of the system applicants except Hughes/GTE have indicated an interest in program transmission arrangements. A.T. & T., which originally expressed such interest, is not presently proposing to provide service to the networks via satellite facilities.

[31] The network companies contracted with Page Communications Engineers, Inc., for a study of the manner in which broadcast program transmission requirements could best be met, utilizing satellite and/or terrestrial microwave facilities designed primarily for this specialized purpose, as an alternative to the continued use of A.T. & T. facilities. According to the networks, the Page Report (submitted to them on Aug. 3, 1970) indicated that either a satellite system or a terrestrial microwave system devoted exclusively to program transmission requirements could be constructed and operated with multimillion dollar annual savings to the networks.

[32] CPB and PBS state that they would initially require 109 receive stations in CONUS (equivalent to the number of drop points on the A.T. & T. dedicated terrestrial network when it becomes operational), and should have terminals in Alaska as well. PNR would need 86 receive points. PBS and NPR together would need eight audio channels, and those circuits used by NPR should be matched pairs of 15 KHz for stereophonic transmission.

future. As stated in paragraph 25 (22 FCC 2d 86, 95–96):

> The most important value of domestic satellites at the present time appears to lie in their potential for opening new markets, for expanding the beneficial role of competition in the existing markets for specialized communication services, and for developing new and differentiated services that reflect the special characteristics of the satellite technology. Realization of this potential will require innovative technological and service planning and development.

42. As noted at the outset, the Commission was unable to determine, on the basis of the record before it, the kind of system or systems that would most effectively promote the public interest in achieving the maximum benefit from the use of satellite technology in the domestic communications field. Accordingly, to facilitate such determinations, it invited potential applicants to come forward with concrete proposals for the establishment and operation of systems capable of providing multiple or specialized services, stating (paragraph 19, 22 FCC 2d at 95–96):

> Applicants may propose the rendition of such services directly to the public on a common carrier basis or by the lease of facilities to other common carriers, or any combination of such arrangements. Applicants may also propose the private ownership and use or the joint cooperative use of the system by the several owners thereof. Applicants may further propose the shared use of some facilities by different systems, or a division in the ownership of various system components (e.g., user ownership of earth stations to afford direct access to the space segment of a common carrier or cooperative system). (Footnote omitted.)

Applicants were further specifically requested to state the terms on which service would be offered to public broadcasting and other educational users, and to address the question of whether the facilities would be capable of providing service to Alaska and Hawaii in the interest of national unity (22 FCC 2d at 100–101). The Commission also announced that it was rejecting the "pilot program" approach by which the Commission would specify the guidelines for an initial system. The Commission noted that it was technically feasible to accommodate more than one system and that it was therefore preferable to permit potential applicants to take the initiative in submitting concrete proposals.

43. The concurrently issued notice of proposed rule making (22 FCC 2d 810) called for comment and suggestions as to the policies that the Commission should follow to resolve possible economic or technical conflicts among applicants, e.g., in such areas as orbital locations and frequency usage. In addition, the commission requested comments on the appropriate initial role of A.T. & T. in the domestic communications satellite field. Specifically, the Commission noted the concerns that A.T. & T., by interservice subsidy, might discourage or foreclose entry by others into the markets for specialized services; that innovative planning by A.T. & T. might be constrained by its existing terrestrial facilities and services; and that, because of its position as the dominant domestic carrier, A.T. & T.'s expansion into the domestic satellite field might impact unduly upon (if not discourage) the system planning of other potential entrants and the services they seek to provide. Finally, the rule making asked for comments as to whether the Commission should promulgate rules governing procurement, including the authority for and nature of any such rules, and on proposed policies as to earth station ownership, access, and interconnection with terrestrial facilities.

44. As noted above, the 1970 report does not constitute a statement of policy by the Commission. It does, however, reflect the desire of the Commission to give serious consideration to the possible uses of satellite technology in the domestic field as a means of achieving new communications services as well as expansion in the scope and flexibility of existing services. The report also raises the basic question of whether these objectives can be accomplished by satellite facilities being provided by existing carriers or new carriers or private entities. Thus, the Commission announced its intention to give serious consideration to enhancing competition in the development and provision of communications services—existing and new—as well as to enhancing competition between different modes of communications, in a manner consistent with other relevant public interest considerations (see paragraph 20 of the 1970 report, 22 FCC 2d at 94, and paragraphs 54, 57, and 67–70 below).

A. THE NUMBER AND NATURE OF SPACE SEGMENTS TO BE AUTHORIZED INITIALLY

45. To recapitulate briefly, in response to the 1970 report the Commission has received eight applications for domestic satellite systems, proposing a total of 20 in-orbit satellites with a combined capacity of about 600 transponders. Except for Comsat/A.T. & T. and Hughes/GTE, all of the system applications propose multipurpose common carrier systems offering a variety of proposed services to the public—including program distribution for the broadcast networks.

Comsat/A.T. & T.: Comsat proposes to lease three (24-transponder) satellites to A.T. & T. for 7 years for the latter's use, exclusively or primarily as an alternate means of routing A.T. & T.'s terrestrial services with no difference in tariff to the consumer. A.T. & T. would provide its own earth stations and terrestrial interconnection facilities.

Hughes/GTE: Hughes proposes to lease eight (backed up) transponders to GTE operating companies for 7 years. Hughes would use the remaining satellite capacity for a private CATV networking venture (with two backed-up transponders reserved for use by public broadcasting). Hughes and GTE would each own and operate independent earth station facilities.

The broadcast networks have expressed an interest in domestic satellites, but have not yet decided whether to convert to satellite interconnection, in whole or in part, or upon any particular applicant.

46. The proposed satellites vary as to capacity and technology. Four applicants (Hughes/GTE, Western Union, WTCI, and the RCA applicants (as one alternative)) propose 12 transponder satellites. Hughes/GTE and Western Union propose the same technology, based on the Telsat satellite Hughes is currently building for the Canadian domestic system. WTCI has worked with a different satellite manufacturer in preparing its application (North American Rockwell) and the RCA applicants are as yet undecided as to a particular satellite or manufacturer.[33] Two applicants, Comsat and Comsat/A.T. & T., propose 24-transponder satellites which are modified versions of the Intelsat IV satellite of the global system. MCI Lockheed proposes 48-transponder, three-axis stabilized satellites. A demonstration model of this satellite, which would utilize 12/14 GHz as well as 4/6 GHz frequencies, is currently under construction at the Lockheed Missile and Space Center. Fairchild proposes a 120-transponder, three-axis stabilized satellite based largely upon the technology of the ATS–F satellite it is now building under contract to NASA. The Fairchild proposal contemplates narrow beams (e.g., spot beams for individual cities) and reuse of frequencies. In addition to 4/6 GHz, Fairchild contemplates the use of 7/14 and 12 GHz frequencies and offers an option of service to remote areas at 2 GHz.[34]

1. Options

47. The principal options appear to be these:

a. One space segment (selection of either one applicant or a consortium);

b. Selection of some of the pending applicants on the basis of the comparative merits of their proposed systems and other relevant public interest considerations; or

c. Some form of "open entry" for all applicants except those, if any, found disqualified on policy grounds.

2. Positions of the parties

48. As more fully set forth in the appendix (paragraphs 1–63), most of the applicants and other parties are opposed to a monopoly authorization either to a single applicant or a consortium of all the applicants. Some, including the Department of Justice, OTP and several

[33] In the event that the RCA applicants decide upon a 12-transponder spin-stabilized satellite, they propose to use the Hughes Telsat satellite. If three-axis stabilized satellites are to be used, potential suppliers include RCA (Astro Electronics Division) and General Electric Co. The RCA applicants have recently filed amendments proposing as an alternative a higher capacity satellite to be launched by an augmented launch vehicle (Thor-Delta or comparable) with a greater payload capability. This alternative also contemplates the use of 2.5 GHz frequencies to operate with 7-foot diameter earth stations in Alaska.

[34] Fairchild has recently tendered an additional proposal for satellites to provide program transmission services to the networks utilizing 4 and 6 GHz or 7/14 GHz frequencies (two in-orbit satellites and one ground spare).

applicants (e.g., MCI Lockheed, Hughes, WTCI), support a policy of unlimited open entry on the ground that this is most likely to result in economy in development and innovation in technology and services. Others, while asserting that there is room for several systems, doubt whether the present and immediately foreseeable potential market is sufficient to support all of the pending systems. However, the parties are almost unanimously against comparative hearings, and urge the Commission to arrive at some policy solution which would permit prompt authorization of several systems.

49. One applicant (Comsat) claims that there is need for only a single multipurpose system (plus separate facilities for A.T. & T.) in view of the limited number of orbital locations and basic reliance of many applicants on the same markets for economic support (e.g., the television networks). Though Comsat seeks a monopoly grant, A.T. & T. urges the Commission to authorize the Comsat/A.T. & T. proposal and such other applicants as can reasonably be found in the public interest. Fairchild cautions the Commission to avoid a wasteful multiplicity of systems that might stifle the potential of the technology and result in higher costs, and suggests that its proposal would afford an optimum initial system from the standpoint of orbital and spectrum utilization. In any event, Fairchild requests the Commission to disregard the existing contract between Comsat and A.T. & T. which, it asserts, would render meaningless any policy of competitive open entry.

3. Discussion and analysis

a. Technical considerations:

50. Many of the 20 in-orbit satellite locations as proposed by the applicants conflict with each other and with orbital locations that have been selected by Canada. However, it appears technically feasible to accommodate all of the proposed in-orbit satellites in the orbital arc capable of illuminating the United States at 4 and 6 GHz (i.e., in that portion not used by Canada) by reducing orbital separations to about 3°, by utilizing careful frequency and polarization coordination, and by shifting some satellites from the orbital locations that could serve Alaska and Hawaii as well as Conus (about 6) to orbital locations serving only Conus and more easterly off-shore points (about 14). Further, it appears that none of the system proposals could be disqualified, without hearing, as technically infeasible—although some may entail more risk than others and there may be some question as to whether all of the proposed systems could achieve the performance objectives stated by the applicant.[25]

b. Economic considerations:

51. It appears to the Commission that the total initial space segment capacity of the eight proposed systems substantially exceeds the present and foreseeable communications market for domestic satellite service. In combination the applicants have proposed 600 in-orbit transponders,[26] of which 336 would be primary and the rest spare. By their own estimates, the proposed systems (including earth station and other terrestrial facilities—either applied for or contemplated) would require a total initial capital investment on the order of $1.2 billion, and annual revenue requirements approximating in total about $400 million.[27] A.T. & T. probably has the ability to utilize the capacity proposed in the Comsat/A.T. & T. system (48 primary and 24 spare transponders), and Hughes/GTE may be able to use much of the transponder capacity of their proposed system (12 primary and 12 spare). Some of the other applicants undoubtedly can supply some traffic under their control (e.g., Western Union, the RCA applicants and, perhaps to some extent, MCI Lockheed and WTCI). Comsat and Fairchild have no terrestrial traffic to transfer and no customer commitments (apart from A.T. & T. in the Comsat/A.T. & T. proposal). Most system applicants are relying largely upon speculative business, which they hope will materialize after the facilities become operational, and in some instances on the same potential customer. For example, each of six applicants has proposed capacity to accommodate the commercial broadcast networks. The networks themselves have not yet selected any applicant, or even made clear an intention to convert to satellite interconnection.[28] Thus, it seems obvious that the present and immediately foreseeable communications market cannot support all eight systems with all of the facilities proposed.

52. However, the Specialized Common Carrier decision took cognizance of the circumstances that the "demand for communications services is growing very rapidly and can be expected to continue to expand at very high rates," that there is "an increasing public need and demand for the availability of diverse and flexible means of meeting heterogeneous communications requirements," and that the "effect of new entry may well be to expand the size of the total communications markets" by tapping "latent, but undeveloped submarkets" for specialized services (Specialized Common Carrier Services, 29 FCC 2d 870, 904, 906–908). Moreover, as noted in paragraph 41 above, while some potential uses of the satellite technology seem readily apparent, its greatest potential may lie in the development of new markets and services.[29] "[Past] experience with new means of providing communications services" led the Commission to state a belief in the 1970 Report that "an operating system or systems may disclose other advantages which cannot now be foreseen" (22 FCC 2d at 88). Accordingly, while the satellite capacity proposed by the applicants appears excessive, there seems to be warrant for a conclusion that some competitive entry in the domestic satellite field may be reasonably feasible—particularly if steps are taken in some instances to minimize the capacity of the initially authorized facilities.

53. This does not mean, of course, that the Commission can guarantee that any particular system would be economically viable either initially or in the long run. As in any new venture, there may be a considerable initial period of operations at a loss, and the extent to which viable operations are realizable may be discernible only after operational development of this new technology in the domestic field. The Commission recognized in the 1970 Report that the satellite technology has risks and uncertainties not ordinarily associated with new terrestrial ventures (e.g., risk of launch failure and the inaccessibility of in-orbit satellites for maintenance and repair purposes). Moreover, neither the generally conceded existence of a large potential communications market nor more extensive data as to the precise nature of its makeup would enable us to predict with any degree of certainty what means the public will pick to meet its needs (whether terrestrial or satellite and, if the latter, which entity). Quite understandably, the consuming public may prefer to defer any commitment to new facilities until they are operational and the quality and terms and conditions of service are demonstrable. We think that the public should not, and indeed cannot, be deprived of that option.

54. We are dealing with the initial implementation of satellite technology for domestic communication. Therefore, the primary objective of any policy should be to maximize the opportunities for the acquisition of technical, operational and marketing data and experience. In the circumstances it appears to us that the public interest would be best served by aiming toward the following objectives:

[25] This conclusion is based on technical advice from the National Aeronautics and Space Administration (NASA).

[26] A transponder is capable of handling, for example, one color television channel, or 600–900 or more voice circuits, or a one-way digital stream of about 35 Mb/s.

[27] We do not suggest that these estimates are realistic. There are some signs that they may be underestimated (e.g., in the case of Hughes they do not include most of the receive-only stations, and A.T. & T. has not included multiplexing equipment). Moreover, in some instances, the applicants plan additional capital investments within the first few years of operation, which are not included in the above totals.

[28] In some areas, the Commission has received applications from miscellaneous terrestrial common carriers for portions of the network interconnection requirements.

[29] For example, General Electric Co. (GE) has informally indicated to the Commission that it is conducting a study, at considerable cost, as to whether its in-house communications requirements could be better met by decreased reliance on leasing facilities from terrestrial carriers and substituting therefor a mix of private terrestrial microwave and leased satellite transponders to operate with transmit-receive earth stations owned by GE. In the event that it should decide upon such a course, GE estimates it would have a 1975 requirement for leasing about seven transponders with appropriate backup capacity.

(a) Early authorization of some domestic satellite facilities.[40]

(b) Avoidance of comparative hearings or other protracted further proceedings at this stage.

(c) Open entry to all pending applicants (except those, if any, found to be disqualified on policy grounds), generally conditioned so as to maintain flexibility to authorize new technology, new usages, and new applicants; and with such special conditions as are deemed necessary and appropriate in the public interest.

c. Discussion of alternatives:

(1) *Options entailing further proceedings.* 55. We do not think that the Commission could, on the basis of this record, select one or a few applicants on the merits on their system proposals without further proceedings (such as comparative evidentiary hearing or the compilation of a much more comprehensive record). The present record contains inadequate information to permit a comparative evaluation of technical, cost and other factors.[41] The applicants have presented information in different forms, some have included items which others have excluded, and many of the estimates do not disclose the precise considerations on which the estimate is based. Moreover, some applicants have challenged various claims in the proposals of others, which they in turn defend. In short, this appears to be a situation where confrontation and cross-examination of witnesses and the compilation of a more comprehensive record would be necessary to resolve factual issues on the merits of the proposals and to make comparative findings.

56. Most of the applicants are against comparative hearings.[42] Moreover, as the Department of Justice points out, comparative hearings would be particularly unfortunate in this area. Given the number of applicants, the complexity of their proposals, and the importance of the stake, it is unlikely that such a proceeding could be expedited. Moreover, the problem of proprietary information would complicate the procedure and might preclude the compilation of an adequate public record on technical aspects. Further, in order to compare the proposals, it would be necessary to cutoff amendments to the applications. The rapidly developing technology in this field would probably make obsolete the plans on which the hearing and the Commission's findings would be based. In view of the nature of this new venture with its inherent uncertainties, the applicants should have maximum flexibility to perfect their proposals and to make changes up to the latest practicable time. In addition, some of the pertinent factors involve future uncertainties not subject to evidentiary proof (e.g., the exact size of the potential market for domestic satellite communications or the precise breakdown of the various latent submarkets that might be stimulated and developed by operational facilities). The Commission stated in the Specialized Carrier decision that: "Factors of this kind do not lend themselves to precise prediction, and we would not undertake to make definitive findings as to such future developments even if we were to hold an evidentiary hearing" (29 FCC 2d 870, 919). Most critical, the time consumed in a lengthy comparative proceeding would cause a substantial delay in the provision of any domestic satellite service to the public.

57. Finally, as a matter of policy, we believe that the public interest would not be well served by the selection of a chosen instrument or by a limitation to two or three applicants. In combination, the pending applicants reflect an array of assorted talents and experience, and they have proposed a variety of technical and service features. However, no one proposal stands out as obviously superior to all the other on all counts. Moreover, each of the applicants has potential conflicts of interest or other drawbacks for policy reasons, some more serious than others) see discussion on the claims of disqualification, paragraphs 82–119 below). If a larger number of participants is authorized and the using public has more options, some of the drawbacks may dwindle in importance. Further, for the reasons indicated below, we think that the objectives set forth in the 1970 Report (see paragraphs 40–44 and particularly paragraph 44 above) would be enhanced by the availability of diverse technologies and system operators. In short, in our view, the public interest would be best served by avoiding comparative hearings to choose one or a few applicants.

58. Also, for these reasons and policy objectives, we are of the view that the Commission should not require a single space segment consortium based on one technology. The applicants have proposed a variety of satellite technologies, and are in dispute as to which is best. Unless they should voluntarily agree upon a particular technology, which appears unlikely, it would be up to the Commission to select or prescribe the space segment technology. At the very least, this would require considerable further technical assistance from NASA. Moreover, fairness to the applicants and other potential users might entail an opportunity to be heard on NASA's recommendations.

59. The applicants are generally opposed to a consortium to own and operate a common space segment for all. As they point out, if only one type of space segment is authorized, the design characteristics and technology of the satellites would become a limitation on the system's performance. Compromises would be necessary to incorporate the widely varying system characteristics in one spacecraft design.[43] Apart from the claims that one multipurpose system would not meet varied needs, opportunities for diversity and experimentation would be substantially diminished. A premature commitment to a particular technology might impede the introduction of new and different satellite usages and systems. Moreover, the potential benefits to be derived from competition among diverse technologies would be diminished to the extent that service offerings and rates are geared to the use of the same space segment technology and earth stations compatible with that technology. Even assuming a competitive ground environment, all participants would have the same space segment costs and technical constraints, and would therefore have less room to innovate in service offerings and rates.

60. In addition, if only one kind of space segment were to be selected, there would be a natural tendency to follow the safest course, i.e., to choose more conservative, proven technology rather than a more innovative proposal like that of MCI Lockheed or Fairchild. Some parties assert that the technology of these applicants is undemonstrated and more risky. While the Fairchild proposal contemplates accommodation of A.T. & T. growth traffic, this potential user has expressed doubts as to whether the Fairchild proposal could provide the technical quality of service it desires. Some parties, including potential users, have questioned the desirability of using the 12/14 GHz frequencies proposed, in part, by MCI Lockheed. The broadcast networks have indicated a preference for the use of 4/6 GHz for program distribution purposes, whereas Fairchild has proposed 7/14 GHz.[44] Yet, MCI Lockheed and Fairchild each urge that the technology proposed in the particular application has marked advantages over the Telsat or modified Intelsat IV type of satellite or the use of 4/6 GHz frequencies alone. And Hughes itself says that the "problems inherent in establishing new technology should not be a ground for initial disapproval."

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[40] This is not to suggest, of course, that construction permits could be granted by, or simultaneously with, the pending policy determinations. Regardless of whether amendments are necessary to achieve compliance with the Commission's policy decision, processing of the applications has not yet been completed. Some amendments would obviously be required in any event (e.g., to remove orbital location conflicts, to resolve claims of frequency interference between some earth stations and terrestrial facilities, etc.)

[41] While we have received technical assistance from NASA, it has not attempted to evaluate the applicants against each other in considering the technical aspects of their system proposals.

[42] GTE asserts that comparative hearing is not necessary in the case of its proposal, but may be appropriate for others. The RCA applicants are generally opposed to comparative hearings, but would claim comparative hearing rights in Alaska if any entity other than RCA/Alascom is authorized to serve that State.

[43] For example, if the Commission were to select a space segment utilizing only 4/6 GHz frequencies, that would preclude the MCI Lockheed proposal for 12/14 GHz earth stations located downtown. The low-cost, dual feed (nontracking) receive-only earth stations proposed by Hughes are dependent upon satellites spaced 3° apart, whereas low-cost, small antenna diameter transmit-receive earth stations proposed by another applicant might require somewhat wider satellite spacing.

[44] Fairchild has recently tendered a proposal for separate satellites for network program distribution at 4 and 6 GHz or 7 and 14 GHz.

61. In the circumstances, we conclude that the public interest would be better served by a policy of permitting any applicant a reasonable opportunity to employ the technology of his choice. Such a course is also more apt to afford users a wider choice of options as to how they may best satisfy their communications requirements—a goal the Commission found to be desirable in the Specialized Carrier proceeding. It would further comport with the Commission's decision in the 1970 Report not to prescribe technical guidelines for an initial system but rather to permit applicants to take the initiative. Accordingly on policy grounds—as well as to avoid procedural delays—we believe that the choice of technology should be a voluntary matter for both applicants and users.

(2) *Options available on the basis of this record.* 62. There are some alternatives which the Commission probably could adopt without further proceedings. First, it might adopt a policy of unlimited open entry, authorizing all of the satellite facilities proposed by all of the applicants who are found qualified and are willing to proceed. Second, it could permit entry by all applicants found qualified, but limit the number of facilities to be authorized initially pending a stronger showing that additional facilities are required to serve the present or future public interest, convenience and necessity. In either event, the Commission could disqualify one or more applicants on policy grounds, and/or impose such conditions on any authorization as are found to be reasonable and necessary in the public interest.

OPEN ENTRY OPTION I

63. As previously indicated, accommodation of all of the proposed satellites would just about fill all of the 4/6 GHz orbital locations with 1971 technology for 7 or more years, and leave little room to accommodate new technology or new applicants at those frequencies.[45] Moreover, it seems obvious that the proposed satellite capacity is substantially in excess of what would be needed to meet present and foreseeable domestic communications satellite traffic. Of course, under an unlimited open entry policy, some applicants might decide to merge with others or drop out. There have been some indications that Western Union and the RCA applicants might like to combine with GTE, if the latter were not bound by contract to Hughes or if Hughes would permit them to join. If the networks should announce a decision for one applicant or against conversion to satellite transmission at this time, this might lend added impetus to merger efforts. Moreover, some of the applicants (e.g., Western Union, the RCA applicants or Comsat) might reduce their requests for three in-orbit satellites to two—since the motivation for six-fold accommodation of the requirements of one potential customer would disappear.

64. Since the Fairchild proposal is dependent primarily upon acquiring A.T. & T. growth traffic and the networks, that applicant might not pursue its pending proposal if the Comsat/A.T. & T. arrangement is authorized and the networks adhere to their present preference for 4/6 GHz (but see footnote 44). WTCI has stated that it plans to proceed regardless of the number of systems authorized by the Commission. MCI Lockheed, which supports open entry for all found qualified, claims that if 20 of the 48 transponders in its primary satellite carried leased private line traffic, its proposed system would provide adequate revenues to meet system operating costs and depreciation charges, and provide an attractive return on investment. Thus, if WTCI and MCI Lockheed mean what they say, they might elect to proceed as proposed in an unlimited open entry situation.

65. In this connection, it bears noting that domestic satellite may pose a somewhat different situation from that presented in the Specialized Carrier proceeding.[46] In concluding that unlimited new entry would serve the public interest in that field, the Commission found that the basic public message services provided by A.T. & T., Western Union and independent telephone companies would not be adversely affected. Moreover, the Commission found that in the circumstances there the public would not be adversely affected if one or more new entrants failed, stating (Specialized Common Carrier Services, 29 FCC 2d 870, 926):[47]

> Further, and more important, we do not perceive any significant adverse consequences to the public in the event that one or more entrants should fail. In the first place as the Department of Justice and other parties point out, if a weaker entrant should encounter difficulty, a merger with or sale of facilities to, a stronger competitor is a more likely fate than bankruptcy or a removal of facilities from the field. Even assuming bankruptcy, the loss of a carrier who is unable to attract sufficient customers for viable operations in a competitive market of substantial potential size is not a matter of great moment to the public at large. The demand for this type of communications service would undoubtedly be met by another entrant or an established carrier, and the frequencies would revert to the Commission for assignment to others. Any remaining customers could transfer to another carrier at what appears to be minimal inconvenience, and such carrier would be required to permit continued use of customer terminal equipment unless there is risk of network harm. Carterfone, 13 FCC 2d 420 (1968). Loss of investment to any failing entrant is a normal business risk in a competitive situation. While this factor may be important where we are concerned with basic communications services upon which the general public depends, it does not outweigh the public interest and convenience in having a wide range of choices for private line users in satisfying their specialized communications requirements. As stated in paragraph 90 above, we do not contemplate any "protective umbrella to the competitors" or "any artificial holstering of operations that cannot succeed on their own merits." (Footnotes omitted.)

66. The above rationale may be equally applicable here insofar as Fairchild, MCI Lockheed, Hughes and WTCI are concerned.[48] The proposed A.T. & T. investment and operating costs are obviously de minimis compared to its overall operations, and it can undoubtedly use the facilities to some advantage even if initial costs may not compare favorably with terrestrial facilities. There is greater need for concern that GTE's contractual commitment and earth station and terrestrial interconnection investment might adversely affect subscribers to the basic communications services of the GTE operating companies in the event its proposed satellite venture results in higher costs and less efficient service than maintaining its existing interconnection arrangements with A.T. & T.[48a] If Comsat suffered a substantial loss in its own proposed domestic system (i.e., that apart from the Comsat/A.T. & T. proposal), there might be an adverse impact on its role in the Intelsat system and on the U.S. policy objectives bound up in that organization. In addition to offering specialized terrestrial services, Western Union furnishes public message telegraph and other essential public services which could be adversely affected by an improvident investment of substantial size in domestic satellite technology (assuming that it could obtain the necessary financing). Furthermore, while RCA Corp., the parent of RCA Alascom and RCA Globcom, may be well-to-do, a substantial loss attributable to the activities of these subsidiaries might have adverse consequences for basic communications services in Alaska and affect RCA Globcom's ability to compete as one of the three interna-

[45] There would, of course, be abundant orbital locations for applicants proposing the use of other frequencies alone (e.g., in the 2, 7, 12, 14, 18, and 30 GHz bands).

[46] The Commission stressed in the Specialized Carrier proceeding (paragraph 104) that its "policy determination as to new specialized carrier entry terrestrially, does not afford any measure of protection against domestic communications satellite entry or otherwise prejudge our determination in Docket No. 16495 as to what course would best serve the public interest in the domestic satellite field" (29 FCC 2d 870, 920).

[47] It should be noted also that the applications of the specialized carriers proposed terrestrial microwave facilities of substantially smaller capacity than the proposed domestic satellite facilities (e.g., roughly the equivalent of the capacity of one satellite transponder for each microwave hop, as compared to the 12–120-transponder satellites proposed by the pending applicants).

[48] It should be noted, however, that a merger with, or sale of facilities to, a competitor using a different satellite technology may not be quite so easy. Further, a user with his own earth station might find it difficult or impossible to use the satellites of another system without a further investment in earth station equipment.

[48a] See paragraphs 97–99, wherein action would be withheld on any GTE application pending receipt of further information.

tional record carriers. The possibilities of public detriment from unlimited open entry here may vary in importance, but they cannot be ignored.

67. For, as set forth more fully in the Specialized Common Carrier decision (29 FCC 2d at 900–903), the basic touchstone for decision under the public interest, convenience and necessity standard of sections 214 and 309 of the Communications Act is the Commission's mandate to regulate "interstate and foreign commerce in communication by wire and radio so as to make available, so far as possible, to all the people of the United States a rapid, efficient, Nationwide, and world-wide wire and radio communications service with adequate facilities at reasonable charges * * *" (section 1) and "generally encourage the larger and more effective use of radio in the public interest" (section 303(g)). While "competition is a relevant factor in weighing the public interest" in the communications common carrier field, it cannot be assumed that "competition is bound to be of advantage" or that it is the sole pertinent criterion. FCC v. RCA Communications, Inc., 346 U.S. 86, 90, 93–97 (1953). The "Commission must at least warrant, as it were, that competition will serve some beneficial purpose" and is "reasonably feasible" (id., at 96 and 97). In exercising its discretion in this area, the Commission "should consider the public interest in maintaining the health and stability of existing carriers" (U.S. v. Dixie Highway Express, Inc., 389 U.S. 409, 411–412 (1967)). Even in the noncommon carrier communications field, economic injury resulting from competition, "while not in and of itself a matter of moment, becomes important when on the facts it spells diminution or destruction of service"; and where "competitive effects * * * produce detriment to the public interest," the public interest controls" (Carroll Broadcasting Co. v. F.C.C., 258 F.2d 440, 443–444 (C.A.D.C., 1958)). See also, F.C.C. v. Sanders Bros. Radio Station, 309 U.S. 470, 475–476 (1940); WLVA, Inc. v. F.C.C., Case No. 24,702, C.A.D.C. (decided January 4, 1972).

68. Of course, as stated at the outset, the Commission is not in a position to guarantee the viability of any domestic satellite undertaking. But our principal concern and objective is to maximize the opportunity for realization of the public interest goals we have defined above. On the one hand, it is recognized that the satellite technology in the domestic field is likely to develop most effectively, efficiently, and fruitfully in a climate where various entities are free to plan and design systems which they believe would attract customers and to devise service offerings and rate patterns to the same end. On the other hand, it must be remembered that this country has perhaps the most sophisticated and complete system of terrestrial facilities available anywhere in the world; that the Commission has recently enunciated a policy favoring competition in the field of specialized common carriers, and a number of such carriers are proposing to enter the terrestrial field to provide such services; that satellite communications systems require very heavy initial investment, provide large capacities and involve costs which, relatively speaking, are not related to the distance between earth stations or the traffic obtained by a particular system.

69. Under these circumstances, a policy of unrestricted entry with unlimited facilities presents a real danger, particularly at this initial stage of introducing domestic satellite technology to domestic use, of fragmenting the market for potential satellite services to such an extent that most carrier entrants would fail to come even remotely close to covering their costs. This, in turn, could well discourage entry by those entities who are prepared to take reasonable investment risks to develop and penetrate the market for satellite services. It might also result in the survival only of those entities, such as A.T. & T. which have themselves, or are given through affiliates, massive resources unrelated to the domestic satellite market. This would defeat the situation the Commission is seeking to create where competition would determine how the most efficient survive, where innovative services are given reasonable opportunity to attract a market, and where the development and testing of different satellite technologies are encouraged to the extent practicable.

70. Accordingly, we believe that the best course, both from the point of view of the using public and the applicants themselves, may be to establish a framework of policies within which the applicants would be afforded an opportunity to be grouped in accordance with the particular technologies they have proposed and authorized to share the same basic space segment facilities. This would reduce the required investment and overheads considerably and at the same time leave each entity completely free to be innovative in the type of services and charges therefor which it can devise. We turn now to a more detailed discussion of the methodology whereby this alternative might be achieved, and some of the possible variations that might be incorporated.

OPEN ENTRY OPTION II

71. The Commission could adopt a policy of open entry to all pending and future applicants found qualified, but consolidate in a common space segment those who have proposed the same satellite technology and authorize minimum facilities to each space segment initially pending a stronger public interest justification for additional capacity. By requiring or strongly encouraging those who have proposed the same type of satellite to share a common space segment, several proposed spare satellites (both in-orbit and on the ground) could be eliminated. There would be need for only one tracking, telemetry and control (TT&C) facility per space segment. Common space segments utilizing the same satellite technology would make possible shared use of transmit-receive earth stations in some areas (thereby reducing the number of such stations and the size of the earth station investment by participating entities), and might facilitate user access to different services via the same receive-only earth station (see paragraphs 125–132). Unnecessary or duplicated capacity for network program transmission could be avoided by not authorizing satellites intended primarily to meet the unique requirements of a large potential user until there is a firm customer commitment to a particular applicant or licensee. Further, it is not necessary to authorize now all of the satellite capacity that might be needed by the end of the decade. Incremental capacity, either of the same type or based on then current technology, can be authorized at any time to any initially authorized participant or to a newcomer—as demand materializes or traffic growth patterns become discernible.

72. It is contemplated that each participant in a common space segment would own a proportionate share of the facilities on a cost-sharing basis. Each participant could use its share of the satellite capacity in whatever manner it desires (including, in the case of Hughes, for private CATV network operations), provided that such operations are not inconsistent with any of the conditions set forth in this second report and order or the provisions of applicable law. No participant would have any commitment to the initial joint venture beyond its proportionate share of the funds required to procure and launch the initially authorized satellites (plus the ground spare if needed), and of the costs of managerial services (e.g., TT&C).[49] Any participant could at any time, subject to prior approval of the Commission, sell its share to any remaining participant in the initial joint space segment venture or to an independent entity. Each participant could be authorized its own earth station facilities to operate with its share of the satellites, subject to the conditions set forth in section C below concerning earth station ownership, access and interconnection.[50] Each such space segment participant would be licensed by the Commission upon condition that a single managerial licensee would be authorized to perform TT&C and other

[49] The obligation to pay a proportionate share of the costs of managerial services would extend for the life of the satellites or until the Commission approved a sale of the participant's share to another entity assuming such obligation.

[50] It should be noted that the conditions in Section C below include a requirement that common carrier participants in a shared space segment shall proportionately own on a cost-sharing basis a common transmit-receive earth station in any area where another participant in the same space segment has proposed a transmit-receive earth station in reasonable geographic proximity. However, each such space segment owner may be authorized to own an individual earth station in any area where no other participant in the same space segment has applied for a transmit-receive earth station in the same vicinity. (See paragraphs 130–131.)

managerial functions. Such managerial licensee need not necessarily be one of those licensed to own the satellites.

73. Such initial common ventures might have advantages for the participants without hampering their operations, as well as offer benefits to the public.[51] It would afford each participant in a common space segment an opportunity to experiment with the satellite technology at the risk of a comparatively small investment, and with no financial commitment to the common venture beyond its share of the initial facilities and managerial costs (see footnote 49). Indeed, this option may enable entry by some applicants who might otherwise find it difficult to make the required showing of financial qualification for an entirely independent system under Open Entry Option I. If any participant desired to drop-out or was authorized an independent space segment during the life of the initial satellites, it could probably sell its share to the remaining participants or an outsider. And, for the life of the satellites at least, the public would have a variety of satellite services available from multiple entities without substantial risk to any participant in a joint venture. In short, the Commission could extend an opportunity for a demonstration of all the different space segment technologies that have been proposed and permit entry by all of the pending system applicants found qualified, in a manner which would permit most of them to experiment with the technology before before becoming committed to an extensive financial investment or to a particular technology, and still retain flexibility to consider new proposals at 4 and 6 GHz (as well as other frequencies) either by the initial licensees or newcomers.

74. As previously indicated, Western Union and Hughes/GTE have proposed the same type of 12 transponder satellite (similar to that of Telsat), and the RCA applicants are undecided whether to use this satellite or a different one.[52] WTCI has proposed a similar satellite of the same capacity, but has been working with a different manufacturer. Comsat and Comsat/A.T. & T. have proposed the same 24 transponder satellite (a modified version of the Intelsat IV satellite). MCI Lockheed and Fairchild have proposed satellites substantially different from each other and from those of all other applicants.

75. WTCI, MCI Lockheed and Fairchild are not presently engaged in extensive common carrier services upon which the general public is dependent, and each seeks a minimum quantity of satellites.[53] We think that the public interest would be served by affording MCI Lockheed and Fairchild an opportunity to demonstrate the claimed advantages of their more novel, higher capacity satellites as proposed. These applicants could, if desired, voluntarily permit other entities to share ownership in such space segments on the terms specified above for common space segments, subject to prior Commission approval but with no requirement for such sharing. While WTCI has worked with North American Rockwell in preparing its application, the proposed satellite is substantially similar to the Hughes Telsat satellite and the capacity is the same. In the circumstances, we think that WTCI should be afforded the option of proceeding independently with a different manufacturer or of participating in a common space segment with those proposing the Hughes Telsat technology as described in paragraph 77.

76. Except for the foregoing applicants and Hughes (which seeks to use only some transponders rather than exclusive use of a satellite or satellites for its proposed CATV operations), all of the remaining space segment applicants are existing common carriers presently engaged in providing essential communications services to the public. Hence, the considerations discussed in paragraphs 51 and 65–70 above seem to apply with particular force in their case. However, one of the principal policy objectives in the authorization of initial domestic satellite facilities is to gain technical, operational and marketing data and experience to assist future industry and agency decisions in this field. Accordingly, the public interest, convenience and necessity would be served by affording such pending applicants found qualified an opportunity to proceed as specified below (and in accordance with other policies and conditions set forth in this Second Report and Order) without any further showing as to: (1) Whether the capacity of the facilities is justified by traffic under the control of the applicants, firm customer orders, or the potential market reasonably to be predicted for domestic satellite operations in the near future; and (2) whether the cost of the satellite system facilities is the same as or less than the cost of equivalent terrestrial facilities.[54]

77. The common space segments to be authorized initially without any further showing of public need might consist of the following facilities (as well as ground spares and TT&C facilities):

Space Segment A—The Commission could authorize three in-orbit satellites of the type proposed by Western Union and Hughes/GTE, to be proportionately owned by each such applicant on a cost-sharing basis (with an option to WTCI and the RCA applicants to share in this space segment on the same terms or to proceed independently with different satellite technology). In the event that the RCA applicants elect to proceed separately with different technology, such authorization would be upon condition that these applicants participate in Space Segment A to provide service to Alaska until such time as any independent RCA space segment is operational, and upon the further condition that they make a reasonable showing that their existing services to the public would not be adversely affected.[55] For good cause shown that three in-orbit satellites would be insufficient for the needs of the participants, the Commission would consider authorization of additional in-orbit satellite capacity. (See paragraphs 97–99.)

Space Segment B—The Commission could authorize two or three in-orbit satellites of the type proposed by Comsat and Comsat/A.T. & T. to be proportionately owned by Comsat and A.T. & T. on a cost-sharing basis. For good cause shown the Commission would consider authorization of additional satellite capacity to either participant.[56] (See also, paragraphs 78–79.)

In other words, the number of in-orbit satellites specified above is intended to reflect only what appears prima facie warranted for experimental or demonstration purposes, with no further requirement for any additional showing of public need or lack of potential public detriment. As previously stressed, any space segment licensee, including a participant in a common space segment, may be authorized incremental or independent satellite capacity at any time upon a reasonable showing that the authorization of such capacity would serve the public interest, convenience or necessity.

78. Any applicant grouped in Space Segment A or B above may elect instead to have its pending proposal considered pursuant to such further proceedings as may be deemed necessary by the Commission to enable the requisite public interest finding, or to take advantage of the opportunity here afforded while reserving the right—either simultaneously or in the future—to seek additional or independent space segment facilities for good cause shown. Choice of the latter courses

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[51] The Commission has authorized cost-sharing arrangements for facilities in the international field.

[52] See footnote 33.

[53] While WTCI and MCI are applicants for terrestrial facilities for specialized common carrier services and WTCI is now operating as a miscellaneous common carrier serving CATV systems and others, the Commission determined in the Specialized Common Carrier decision that the public would not be adversely affected by the risk of failure of these entities (29 FCC 2d 870, 925–927). Moreover, WTCI, MCI Lockheed and Fairchild have each proposed only two in-orbit satellites and hence could not reduce that number without forfeiting an in-orbit spare. Fairchild has recently tendered an additional proposal for another satellite to provide program transmission services to the networks utilizing 4 and 6 GHz or 7 and 14 GHz frequencies. Since satellites intended primarily for network program transmission service would not be authorized until there is a firm customer commitment, this poposal would in any event be held in abeyance pending a network order to Fairchild.

[54] However, see paragraphs 77, 97–99 below concerning the requirements for additional information from GTE, and possibly the RCA applicants.

[55] Since the RCA applicants are as yet undecided as to a manufacturer or a satellite design (whereas the Telsat satellite is in production), activation of any independent RCA facilities might take a longer time. Moreover, RCA's latest proposal for a higher capacity satellite to be launched by an augmented launch vehicle with greater payload capability than the present Thor-Delta would entail, among other things, research and development of a new spacecraft. In addition, if such a satellite were intended primarily for network program transmission, action on the application would be held in abeyance pending a firm network commitment.

[56] For example, if Comsat should succeed in obtaining the network program transmission business, the Commission might well be in a position to conclude that the public interest would be served by authorizing it an independent space segment.

would require a much stronger public interest justification than those now pending before the Commission, and might require further proceedings. Moreover, the policies and conditions elsewhere specified in this Second Report and Order would in any event apply, unless the applicant should show good cause for an exception. The Commission would give processing priority to applications submitted in accordance with paragraphs 75–77.

79. As noted above, A.T. & T. proposes to lease the space segment it desires to use from Comsat under a long term lease.[57] While it is desirable that carriers own the facilities they use to serve the public unless there is some advantage in using the facilities of another entity,[58] A.T. & T. supports this arrangement by pointing out that it is relying upon the most experienced entity in the design, operation and maintenance of commercial communications satellite facilities. A.T. & T. could, of course, take advantage of Comsat's expertise by entering into arrangements whereby Comsat performed the managerial function for A.T. & T.'s space segment. However, in this relatively new technology, we believe that greater latitude than is applicable to terrestrial facilities should be allowed. There may be practical reasons why A.T. & T. would prefer not to become involved in the responsibilities attendant upon being the direct licensee, even with Comsat as manager, such as sizeable investments required for the space segment.[59] We will, therefore, not as a matter of policy prohibit such an agreement. However, several caveats should be noted. A.T. & T. as a common carrier is obligated to obtain and operate facilities in the most economical and efficient manner possible. If A.T. & T. opts to acquire its space segment from Comsat, it will be required to demonstrate that the costs are no greater than if it owned the facilities jointly with Comsat or acquired equivalent facilities by other available means. Secondly, we do not feel that Comsat should be in the position of a supplier of satellite services to A.T. & T. and a common carrier to the general public. There are already close relationships between Comsat and A.T. & T. The latter owns 29 percent of Comsat's stock and elects three of the 15 Comsat directors. It also is the prime customer of Comsat's international service accounting for more than 60 percent of Comsat's gross revenues in 1971. If Comsat were to receive the major portion of its revenues from leasing facilities to A.T. & T. in the initial domestic system, it is only natural to expect that it would seek to maximize its opportunity to retain A.T. & T. as its domestic customer. Also, as hereinafter discussed (see paragraphs 101–104), we are proposing, at least in the initial stages, to bar A.T. & T. from providing specialized services via satellite in order to afford a reasonable opportunity for competition to develop between satellite services of others and terrestrial services of A.T. & T. in the field of specialized services. Under all of these circumstances and in particular, with A.T. & T. as a principal source of domestic service revenue that Comsat would seek to retain, it is not realistic to expect Comsat to compete vigorously in the development of specialized services and thereby challenge A.T. & T.'s terrestrial domination in this field. This would defeat the basic objectives of our open entry policy—that is to encourage improvement and innovation in domestic communication services and facilities by exploiting fully the unique characteristics of satellite technology. Accordingly, and subject to the further policy considerations discussed at paragraphs 114–116 below, we propose that Comsat be given the option either of limiting itself to the provision of satellite facilities to A.T. & T. under lease or entering the field as a supplier of satellite services to domestic entities other than A.T. & T. pursuant to tariffs. In the latter instance, it could share ownership in one or more satellites with A.T. & T. and act as the manager for the jointly owned system. In any event, Comsat could be the manager for facilities owned by A.T. & T. or leased by A.T. & T. from Comsat.

4. Findings and conclusions on Issue A

80. In light of all the foregoing, we find and conclude that the public interest, convenience and necessity would be best served by pursuing the alternative of Open Entry Option II. In our judgment, this alternative is most likely to permit the early implementation of domestic satellite service to the public on a competitive basis which is reasonably feasible and equitable, without undue risk of substantial adverse impact on existing communication service to the public. We are further of the opinion that such risks as may be entailed are outweighed by the benefits reasonably to be expected to flow from such initial entry in the form of technical, operational and marketing data and experience which would materially assist future industry and Commission decisions in this field.

81. This policy determination, as earlier noted, concerns pending applicants found legally, technically, financially, and otherwise qualified. We turn now to the question of whether any of the pending system applicants should be disqualified on policy grounds, or have further conditions placed on any authorization to protect the public interest.

B. POSSIBLE DISQUALIFICATION ON POLICY GROUNDS AND/OR CONDITIONS

82. All of the pending system applicants are subject to claims that they should be disqualified as space segment licensees on policy grounds having to do with alleged potential conflicts of interests and/or the achievement of an enhanced competitive position vis-a-vis some one else. Comsat seeks disqualification of satellite equipment suppliers, potential users, and terrestrial carriers, leaving only its own proposal and its arrangement with A.T. & T. (see paragraphs 2–6 of the appendix).[60] Some other parties (e.g., Western Union, MCI Lockheed, Fairchild, Hughes, and the Department of Justice) urge either outright disqualification of, or the imposition of various conditions on, any grant to Comsat or A.T. & T. (see paragraphs 8–9, 16, 20–21, 28–31, 37–39 of the appendix). Western Union also challenges Hughes and the RCA applicants on undue "concentration of control" grounds (appendix, paragraphs 22–23).

83. None of these policy questions is entirely lacking in merit, though some appear more serious than others for the reasons indicated below. However, almost a year was afforded for the submission of applications and these are the only system applicants who came forth. They have demonstrated an immediate, concrete interest in the field and they are the sole entities now available for early authorization. Moreover, each has some background or experience of a nature that might make a useful contribution toward the activation of this new, and somewhat risky, domestic technology and the expeditous realization of its potential benefits for the public. Indeed, it seems dubious whether an applicant which lacked any experience in terrestrial or satellite communications or in building communications satellites or any stake as a user, would possess the practical know-how needed to bring this sophisticated comunications medium into being for domestic use in a prompt, effective and efficient manner. If the Commission were selecting a chosen instrument or limiting entry to a chosen few, we think that the alleged individual drawbacks might give cause for greater concern than under an open entry policy which would afford various options to the public and an opportunity for newcomers. Further, the Commission may be able to minimize the possibilities of adverse consequences to the public by imposing various conditions on the initial authorizations. We believe that the public interest would be best served by avoiding initial disqualification of applicants on policy grounds, unless we are persuaded that the alleged conflict of interest is likely to have substantial prejudicial effect on full realization of the domestic satellite potential or on some other important public interest, and that the possible public detriment could not be adequately avoided by conditions on

[57] GTE similarly proposes a long-term lease for Hughes. However, as set forth (paragraphs 97–99), we do not propose to act on the proposal pending receipt of additional information and justification. When such are supplied, we will address ourselves further to the GTE proposal, including the long-term lease aspect if it adheres to that proposal.

[58] See All America Cables and Radio, Inc., 15 FCC 2d 1, 14 (1968).

[59] We are aware of A.T. & T.'s continuing stress on the problems confronting it in raising the vast sums of capital it needs for the various operations of the Bell System.

[60] For some reason, Comsat does not seek to disqualify A.T. & T. as a terrestrial carrier with potential conflicts of interest.

the initial authorization or remedied by future action.

1. Equipment suppliers

84. In our view, entry by satellite suppliers should not be barred at this time. As the Department of Justice points out:

> Because Comsat's specifications are linked closely to spin stabilized satellites, a field dominated by Hughes, the best hope for a competing satellite supplier is to enter the market directly. Entry bypasses restrictions imposed by operators whose satellite specifications are tied to a different technology, and allows suppliers—at their own risk—to test the technology which they are promoting. Forward integration in these circumstances does increase the barriers to entry for competing suppliers, but at this early stage of development, it may be the only way to encourage the development of rival technologies.

That viewpoint finds support in the circumstance that the most novel space segment technologies in the pending system applications are those proposed by MCI Lockheed and Fairchild. The Hughes record as the predominant supplier to the Intelsat system was achieved under competitive bidding. Even if we were to bar entry to Hughes, several system applicants have proposed space segments based largely on Hughes technology—which would make it very difficult for any other supplier to obtain a prime contract under competitive bidding.

85. In the event of a decision not to permit those relying primarily on Hughes technology (i.e., Hughes/GTE, Western Union, Comsat and Comsat/A.T. & T.) to preempt all of the orbital locations they have proposed (i.e., by adopting Open Entry Option II), there will be an opportunity for entry by other equipment suppliers besides Lockheed, Fairchild (and, possibly, North American Rockwell), and/or some different supplier selected by the RCA applicants. Moreover, if non-supplier applicants are not initially committed to a large investment in Hughes technology and have a chance to witness an operational demonstration of rival technologies, they may be more open to persuasion to try a supplier other than Hughes for incremental or second generation satellites. Further, under Open Entry Option II, Hughes would have such a small space segment investment compared to the magnitude of its business operations as a satellite supplier to others (including Intelsat, Canada and possibly other countries), that it seems unlikely that Hughes would engage in practices which might encourage them to turn to other suppliers. It is the Hughes ability generally to prevail in competitive bidding for spin-stabilized satellites, rather than its proposed relatively small space segment ownership, that appears to be the crucial contributing factor towards its dominant position at this time in the field of commercial communications satellite procurement.

86. Under present circumstances, we think that the public interest would be better served by encouraging entry by different equipment manufacturers to demonstrate rival technologies, rather than barring equipment suppliers across-the-board or Hughes alone. As the Department of Justice notes, if Hughes should abuse entry by discriminating against Comsat, the Commission could take remedial action. Moreover, we will condition any authorization to an equipment supplier upon the existence or creation of a separate corporate entity to engage in the communications satellite service aspect. Hughes has indicated that it might do so prior to any Commission authorization.[61] While MCI Lockheed is affiliated with an equipment supplier as well as terrestrial carrier interests, it claims that its corporate structure is designed to prevent control by either. The Astro Electronics Division of RCA is separate from RCA Globcom and RCA Alascom. Finally, if Hughes is barred from owning any space segment capacity, the public might well lose the potential benefits that could flow from its private CATV programing venture—one of the most innovative service offerings proposed in these system applications.

2. Users

87. Nor do we believe that potential users should be disqualified from space segment ownership. It is true that Hughes has various interests in related CATV and program production fields (see paragraphs 5 and 51 of the appendix). However, in the First Report and Order in Docket No. 18397, encouraging CATV program origination and networking, the Commission stated (20 FCC 2d 201, 203):

> Our experience in the broadcast field (both commercial and noncommercial), as well as comments filed in this proceeding, leads us to believe that the successful inauguration of any new network is not an easy matter, to a significant extent because of the high cost and other difficulties in producing or otherwise procuring programming in sufficient quantity and quality for network operations. Moreover, CATV faces an additional hurdle in that its present subscriber base, while affording fees not available to broadcasters, is nevertheless far smaller than the potential audience open to a new broadcast network.

It may take an entrepreneur with the aggressiveness, imagination and resources of Hughes to pioneer CATV network operations.[62] If Hughes' ownership of communications satellite facilities would further its objective of making available to the CATV viewing public a wide diversity of special interest programs, and is willing to undertake that investment, we fail to see why it should be deterred from doing so.

88. While Hughes desires to own the associated receive-only earth stations, it has stated that this is not necessary in every case and that it would be willing to guarantee access to its system by CATV systems owning receive-only earth stations at a lower rate than that charged to CATV system customers who do not (appendix, paragraph 52). Moreover, under Open Entry Option II there would be abundant common carrier space segment capacity available for use by others desiring to transmit CATV programing via satellite. Those utilizing some of the common carrier transponders in Space Segment A could have access to the same receive-only earth stations. We would so condition any earth station authorization to Hughes and its customers (see paragraphs 126–127).

89. The broadcast networks have requested that an opportunity remain available for the submission of a separate system proposal by or on behalf of the network companies, in the event that their negotiations with pending system applicants do not lead to satisfactory arrangements and they still desire to utilize satellite interconnection, in whole or in part. If, as we believe, the public interest is served by affording users a wider choice of options as to how best they may satisfy their communications requirements (e.g., the Specialized Carrier decision) and if a CATV network operator is afforded the opportunity to own private satellite distribution facilities, we see no logical distinction to justify disqualifying broadcast networks as potential space segment licensees. Nor do we think that RCA Globcom/RCA Alascom should be disqualified solely because RCA owns the NBC network, a potential customer. Under Open Entry Option II, the networks would have a variety of pending and potential applicants among which to choose, and there is no compulsion to select the RCA applicants unless they prefer to do so.[63] Even if they should decide upon the RCA applicants, the statutory obligations imposed upon common carriers by section 202(a) of the Communications Act would preclude any preference to NBC or discrimination against CBS and ABC.

3. Terrestrial carriers

(a) Other than A.T. & T.

90. Although Comsat has not included A.T. & T. among the terrestrial carriers it seeks to have disqualified (Western Union, GTE, the RCA applicants, MCI and WTCI), it relies in part on a concern that the Commission expressed in paragraph 26 of the 1970 report in connection with A.T. & T., namely, that a terrestrial carrier might be constrained by its existing terrestrial facilities and services from participating aggressively and

[61] The Hughes/GTE agreement (paragraph 12) recognizes that: "Hughes may form another corporation to which it will transfer, prior to the receipt of the requisite authorizations [i.e., the construction permits] from the Federal Communications Commission * * * any or all of its obligations hereunder" provided that Hughes satisfies GTE that such corporation would have "adequate technical and financial resources to discharge the obligations transferred."

[62] We note also that in the broadcast field the Commission has not precluded RCA from owning a network although it is also an equipment supplier. Further, since the Commission does not require broadcast networks to operate as common carriers or regulate their rates to affiliated stations, we see no distinguishing reason for regulating the rates of a CATV network to its affiliates or requiring it to operate as a common carrier.

[63] It appears unlikely that the broadcast networks would proceed individually. If different networks decided upon different space segments, there might be a problem of duplicate receive-only earth station facilities.

innovatively in the development of satellite technology and service. The Commission noted in the case of A.T. & T. that any "satellite proposal would be supplemental to and compatible with the existing terrestrial network, and would reflect the carrier's necessary and predominant concern over the effect of the satellite technology upon its existing landline investments and markets" (22 FCC 2d 86, 96). To some extent, Comsat may be correct in asserting that this concern is relevant also to other established terrestrial carriers.

91. For example, one of the unique characteristics of the satellite technology is the circumstance that costs are not dependent upon the distance between earth stations. MCI Lockheed, which presently has only a very small investment in terrestrial facilities (the MCI Chicago-St. Louis microwave route and an interest in the Interdata New York-Washington construction permit), has proposed distance-insensitive rates, whereas terrestrial carrier applicants with more extensive existing facilities (e.g., GTE, Western Union, and the RCA applicants) have not.[64] In some instances or for some services, it may be impracticable for the latter to do so. Thus, the four GTE operating company applicants are proposing to use domestic satellites as a partial substitute for their interconnection through joint route arrangements with A.T. & T.[65] In the case of message toll telephone service, the GTE companies could hardly charge their subscribers a different rate depending on whether the particular message was routed (say from California to Florida) via GTE satellite facilities or primarily via A.T. & T. terrestrial facilities. The same would seem to hold true for Western Union public message service, whether the alternative to satellite transmission is terrestrial facilities owned by Western Union or acquired from A.T. & T. Even in the case of private line or other specialized service, it might be difficult for a carrier to charge different rates where its use of satellite facilities is only as an alternative to existing terrestrial facilities rather than for an independent or competitive service offering.

92. On the other hand, the domestic satellite technology may afford a carrier now largely or completely dependent upon obtaining inter-city relay service from another carrier, a more efficient and less costly alternative. For example, RCA Globcom plans to use its proposed satellite facilities between its New York City, Washington, D.C., and San Francisco gateway terminals, in connection with its overseas service, in lieu of leasing facilities from A.T. & T. or Western Union.[66] Moreover, in an open entry situation, the public might have the option of distance-insensitive rates for some services from another carrier such as MCI Lockheed or Comsat if the latter chose to compete on that basis. Further, if the Commission should decide that the public interest requires distance-insensitive rates in a particular situation, it can so condition any relevant authorization for domestic satellite facilities. In addition, even if a terrestrial carrier were somewhat constrained by existing facilities and services in offering the same services by both terrestrial and satellite media, the authorization of satellite facilities might enable such a carrier to offer in addition different services from those it is providing terrestrially.

93. Comsat further argues that a domestic satillite authorization to MCI Lockheed, WTCI or RCA Globcom would enhance their competitive position vis-a-vis other carriers. Insofar as MCI Lockheed and WTCI are concerned, the contention would seem to apply equally to Western Union and A.T. & T., to the extent that A.T. & T. is now engaged in the provision of specialized services on a much larger scale than anyone else. In any event, an open entry policy might afford other sepcialized terrestrial and international record carriers an opportunity to obtain domestic satellite service from independent licensees (such as Comsat and/or Fairchild in the case of specialized terrestrial carriers, and any applicant other than RCA Globcom in the case of international record carriers). Further, these competitors had the same opportunity to apply as the pending applicants and chose not to, although Datran at one time indicated an initial interest and subsequently changed its mind.[67] Moreover, under Open Entry Option II and the conditions set forth in paragraph 151 below, orbital locations will be available for accommodation of future applications by terrestrial competitors.[68] In addition, a flexible policy as to earth station ownership would permit them to have access to space segments owned by others by means of their own earth stations, if authorized (see paragraphs 128–129, 142 below).

94. It is further asserted that section 222 of the Communications Act would preclude RCA Globcom from engaging in domestic service, as well as preclude Western Union from owning an earth station in Hawaii (since it is stated in section 222(a)(10) that the term "'Continental United States' means the District of Columbia and the States of the Union, except Hawaii"). That section prohibits consolidations (including acquisition of facilities) between an international telegraph carrier and a domestic telegraph carrier. It also required Western Union to divest its international telegraph operations as a condition for acquiring Postal Telegraph Co. and thereby becoming the monopoly domestic telegraph carrier upon which other international telegraph carriers must depend for domestic pickup and delivery of the bulk of their international telegraph traffic. However, while section 222 bars mergers or other facilities acquisitions between existing firms; it has little, if anything, to do with a carrier embarking on an entirely new and different venture of its own.[69] RCA Globcom already has a domestic arm in the form of RCA Alascom. Moreover, it states in its application that it is not requesting authority to provide telegraph or telex service within or among the contiguous states (Vol. 1, p. 14). In the event we determine as a matter of policy that Hawaii should be included in a domestic system, there would seem to be no warrant for disqualifying Western Union alone from having any earth station interest there, particularly if the principal use of the earth station is for television program reception and other specialized services and Western Union is precluded from providing telegraph service between Conus and Hawaii.

95. The broader policy question as to whether any international carrier should be permitted to engage in domestic service, or vice versa, is not limited to RCA Globcom but encompasses even more seriously A.T. & T. and Comsat. While A.T. & T.'s domestic operations vastly overshadow its international operations, it is nevertheless the largest international carrier. Moreover, Comsat has a monopoly position insofar as ownership

[64] We do not suggest that MCI Lockheed might abandon its distance-insensitive rate proposal if all the pending MCI applications for terrestrial specialized carrier facilities were to be granted.

[65] The GTE operating companies would still rely on A.T. & T. for its existing interconnection arrangements with the interstate transmission of a predominant proportion of traffic originating in their operating territories.

[66] RCA Globcom presently uses terrestrial facilities of A.T. & T. and/or Western Union to retransmit overseas traffic, destined for the San Francisco area, from the San Francisco gateway terminal to its New York terminal for processing and back again to San Francisco, because it is allegedly less expensive to haul and backhaul across the country than it is to install processing equipment in the San Francisco gateway terminal.

[67] As previously noted, the Commission stressed in the Specialized Carrier proceeding that its "policy determination as to new specialized carrier entry terrestrially, does not afford any protection against domestic communications satellite entry" (29 FCC 2d at 920).

[68] While ITT and WUI request an opportunity to obtain capacity in the space segment of an operating system on an indefeasible right of use (IRU) basis, there is considerable merit in RCA Globcom's position that such an arrangement would unjustly place all of the risks on the pioneering carrier and afford others an opportunity to acquire an ownership interest if the system were successfully inaugurated and to refrain from doing so if the contrary appeared. It would also appear unfair to the pending applicants to force them to grant IRU's to outsiders at this stage, who would thereby gain a wind-fall from the applicant's work in preparing the application, unless the applicant itself voluntarily afforded non-applicants an ownership interest. Such an option has been afforded to MCI Lockheed and Fairchild in paragraph 75. Moreover, the cutoff date for new applications for space segment facilities entitled to be considered in this proceeding has long since passed.

[69] The Department of Justice takes a similar position in stating that its "Merger Guidelines" apply to the acquisition of existing firms and provide no normative guidance where, as here, de novo expansion is being considered.

of international commercial communication satellite space segment facilities by United States entities is concerned. It is difficult to see how we could equitably disqualify RCA Globcom from owning any domestic satellite facilities, solely because it is an international carrier, without acting consistently as to A.T. & T. and Comsat.

96. Comsat further asserts that Western Union should not be authorized to undertake any new responsibility until it has demonstrated that it can properly discharge its present responsibilities in the provision of terrestrial public message service. We have previously indicated our belief that the effect of a possible failure in the domestic satellite field on the existing operations of an established carrier, is a relevant factor which the Commission should not ignore. However, as the Commission noted in the Specialized Carrier decision (29 FCC 2d at 913, fn. 35):

> The plight of the telegraph message service has been a continuing and growing problem even in the absence of any new entry. The arbitrary exclusion of new entry into the developing market for specialized services is certainly neither a practical or a justifiable solution to the problem, assuming that a solution is called for in the public interest.

While the context was different (involving new entry by others rather than the use of a new technology by Western Union), the foregoing rationale seems relevant to the question of whether Western Union should be afforded the same opportunity as other carriers engaged in specialized communications services to own domestic satellite facilities. Moreover, Open Entry Option II would minimize the risk of adverse consequences on Western Union's terrestrial operations.

97. Apart from the foregoing, there is a further concern with respect to GTE. It proposes to acquire satellite facilities to handle certain message toll traffic which originates at its exchanges in different parts of the country and which terminates either within its own exchanges or beyond. At present, GTE relies on the inter-exchange switched network of A.T. & T. for the transmission of all such traffic. GTE, like other independents, maintains its own interexchange facilities in only a few situations to interconnect its exchanges which are contiguous to each other and are located within a common geographical area. The Commission has heretofore carefully distinguished between the interstate switched network telephone services (MTT) of A.T. & T. and other services of A.T. & T. in formulating its policy of encouraging competitive entry of specialized service carriers. Thus, GTE represents the first serious attempt by a non-Bell carrier to provide MTT facilities which will supplant, at least in part, the A.T. & T. nationwide switched network.

98. We are aware of the potential or theoretical values of GTE's proposal, particularly in providing some basis upon which to compare the costs and other factors related to efficiency and quality in handling MTT traffic by alternative methods and different suppliers. On the other hand, the proposal presents various uncertainties as to its effects upon the integrity and efficiency of an integrated nationwide switched MTT network and, hence, the proposal should not be embarked upon without an effective showing of the expected and potential benefits to be derived therefrom, as well as some estimate as to the implication of the effect of a grant (particularly if it were to become a general policy) upon the efficiency, reliability and cost of the present integrated nationwide switched network.

99. We will therefore require GTE, whether it elects to take advantage of Open Entry Option II or to pursue its original proposal, to make a showing which we will evaluate prior to taking definitive action on its applications—in terms of its best estimates of costs and revenues—as to the effect of the arrangement on the efficiency and quality of MTT service. In this connection we expect GTE to submit detailed data as to how it proposes to alter or amend its present contracts for settlement with A.T. & T.; the present of total traffic it originates destined to the points to be served by satellite which will, in fact, be handled by satellite; and what plans it has for handling of the traffic in case of temporary outages or catastrophic failures of its satellite facilities. Also, as a condition precedent to authorizing any GTE proposal, there shall be an affirmative showing by GTE of the kinds of data it intends to gather and report as a basis for an evaluation of the efficiency and economy of the proposed operations compared to its continued reliance of existing interexchange facilities of A.T. & T. It should also be required to make a full showing of what other public benefits may reasonably be expected from its proposal and how it intends to treat the costs of the system for accounting and ratemaking purposes. At the same time we invite A.T. & T. to submit its comments on each of the foregoing matters.

(b) A.T. & T.:

100. The concern that established domestic carriers might be constrained by existing terrestrial facilities and service from participating aggressively and innovatively in the development of satellite technology and service, while pertinent to other established domestic carriers, obviously applies with far greater force to the dominant domestic carrier, A.T. & T. Indeed, the nature of its application confirms the Commission's view in the 1970 Report (22 FCC 2d at 96) that any A.T. & T. "satellite proposal would be supplemental to and compatible with the existing terrestrial network, and would reflect the carrier's necessary and predominant concern over the effect of the satellite technology upon its existing landline investments and markets." As we have noted before, A.T. & T. proposes to use the system for alternate routing of its terrestrial services, for more efficient handling of peak-hour traffic loads which shift from time zone to time zone, and to experiment with 20 and 30 GHz technology. In the latter connection, A.T. & T. has indicated that its principal interest in the domestic satellite technology lies in the potential afforded by the large number of frequencies allocated for communications satellite use in the 20 and 30 GHz regions of the spectrum (if the WARC recommendations become effective). Its application states that a grant would facilitate advanced satellite system research at 20/30 GHz "which may yield great savings in future generations of satellites" (A.T. & T. application, p. 25). Inasmuch as the use of the satellite technology may eventually make it possible for A.T. & T. to achieve significant savings or other important advantages in the provision of its communications services to the public, the public interest would not be served by barring A.T. & T. from use of technology for MTT service at this time even if no new or innovative services are offered.

101. However, the 1970 Report raised a further question as to whether domestic satellite facilities initially authorized to A.T. & T. should be without restriction as to the type of service or limited to the provision of public message service. Before attempting to resolve this question, it is relevant to note the basic policy objective stated by the Commission in the 1970 Report with respect to specialized services (22 FCC 2d at 95):

> The most important value of domestic satellites at the present time appears to lie in their potential for opening new communications markets, for expanding the beneficial role of competition in the existing markets for specialized communication services, and for developing new and differentiated services that reflect the special characteristics of the satellite technology.

The Commission's concern arose from A.T. & T.'s dominant position in the sale of communications service, and the possible adverse impact that A.T. & T.'s use of satellites for the provision of services other than MTT might have on realization of the aforementioned public interest benefits. A.T. & T.'s total annual revenues exceed $18 billion and are growing at an annual rate of more than 10 percent. About 30 percent of its total revenues, or $6 billion, is derived from interstate services. Of this amount, some 85 percent is produced by services which A.T. & T. provides without any competition, principally message toll telephone and WATS services. On the other hand, 15 percent or $900 million are derived from nonmessage services, most of which may be offered by competing entities under the Specialized Carrier decision in Docket No. 18920. Under these circumstances, there is legitimate cause for concern at A.T. & T.'s unrestricted expansion into the domestic satellite field might well deter or discourage entry by those entities who are prepared to take reasonable investment risks in order to exploit the unique economic and operational features of satellite technology for intercity specialized services. Compared to message toll services, the market for specialized services, even though growing significantly, is still a most limited one at this time. Thus, A.T. & T.'s early participation, via satellite facilities, in

the competitive markets for specialized services could well result in its preemption of that market to an extent that would make it economically impractical for other entities to become established. The construction and operation of satellite systems require substantial fixed investments and risks. With A.T. & T.'s vast economic resources and its ability to load a satellite system with message toll traffic from its monopoly market almost immediately, A.T. & T. will have a distinct advantage over potential competitors who are attempting entry with no established base of communication revenues from monopoly markets. Under these circumstances, the prospect of market preemption by A.T. & T. poses a real deterrent to the entry or viable operation by others in the field of satellite services.

102. There is also the concern that by choosing the number of message toll circuits A.T. & T. will operate via any satellite, A.T. & T. will be able arbitrarily to dictate the costs that it desires to allocate to those circuits it devotes to specialized services in which it faces competition. The problem of allocating A.T. & T.'s terrestrial costs between its monopoly and competitive services on an efficient and equitable basis so as to avoid interservice subsidy is a complex and troublesome one. The issue has been the subject of extended controversy and regulatory proceedings for a number of years. The problem is still unresolved, but is the subject of our pending proceeding in Docket No. 18128. The use by A.T. & T. of satellite technology for the total mix of its competitive and noncompetitive services will, of course, add an additional dimension of complexity to the problem.

103. It is stressed that the Commission is seeking to afford a reasonable opportunity for a demonstration of how the unique characteristics of satellite technology can meet user requirements more efficiently than the terrestrial network of A.T. & T., particularly in the existing and emerging markets for intercity specialized communications services—markets now dominated by A.T. & T. In this respect, the Commission seeks to complement or extend the policies it formulated in the Specialized Carrier proceeding (Docket No. 18920). Those policies are designed to increase the competitive sources of supply among which users with specialized communication requirements may make a selection on the basis of the cost and quality of service offered. It might be argued that this limitation on A.T. & T.'s use of authorized satellite facilities is inconsistent with a policy of competitive entry. However, the limitation is not designed to curtail competition; but rather to afford an opportunity for the development and growth of competition, not only between all other entrants but also between satellite services and A.T. & T.'s terrestrial services in the field of specialized intercity communication.

104. In view of all of the foregoing, it is our judgment that realization of the potential public benefits from satellite technology can best be achieved by limiting A.T. & T., at least in its initial system proposal for the use of satellites, to those of its services that are essentially monopoly services, such as message toll and wide area telephone services. This limitation should continue for the length of time required by other entrants in accordance with this second report and order, to establish their satellite systems and services and, in any event, until the Commission has approved an appropriate set of principles and methods governing the allocation of A.T. & T.'s costs among its various classes of services. The Commission will condition any satellite system authorized for A.T. & T.'s use accordingly.

4. Comsat:

105. Many of the concerns expressed by some parties about Comsat entry into the domestic satellite field, due to its ties with A.T. & T. and procurement history with Hughes, should be substantially dissipated by the adoption of an open entry policy which: (1) Affords an opportunity for development of rival technology by those proposing a different equipment supplier; and (2) requires Comsat to elect between serving A.T. & T. or other entities. There still remain the important questions of whether Comsat's role in Intelsat would create a conflict of interest such as to impede its ability fully to exploit the potential of this technology to serve the domestic public interest or prejudice others in doing so, and whether domestic entry by Comsat would adversely affect the effective discharge of its responsibilities as the U.S. chosen instrument in the global system or the realization of the national policy objectives declared in section 102 of the Communications Satellite Act of 1962. In the 1970 report the Commission concluded that Comsat is not legally disqualified from entering the domestic field because of its involvement in Intelsat, but recognized that the "possible advantages or disadvantages accruing from Comsat's relationship with Intelsat are considerations to be weighed as a matter of policy" (22 FCC 2d 86 (paragraph 3), 132–133).

106. With respect to the potential impact of Comsat's international role in the domestic scene, MCI Lockheed asserts that as a member of the Intelsat Board of Governors and as manager of the global system, Comsat would be in a position to pass on such questions as technical compatibility of the proposed system of its domestic competitors with the existing or planned space segment of Intelsat and whether it would avoid significant economic harm to the global system. We note first that the phrase "avoid significant economic harm" appears only in Article XIV(d) of the definitive arrangements,[70] having to do with facilities separate from the Intelsat space segment to meet "international public telecommunications services requirements." No international service is proposed in any of the pending domestic satellite applications. The only standard in Article XIV (c) and (e), concerning the establishment of separate facilities to meet domestic public or specialized telecommunications services requirements, is the "technical compatibility of such facilities and their operation with the use of the radio frequency spectrum and orbital space by the existing or planned Intelsat space segment." Further, while Comsat is solely responsible to Intelsat in its functions as manager, it is subject to instructions from the U.S. Government insofar as its vote on the Board of Governors is concerned and those instructions would be based on the Government's view as to the best interest of the United States on an overall basis. In addition, while the Commission has stated in the 1970 report its intention to cooperate fully with Intelsat in such matters, it bears noting that the definitive arrangements empower the Board of Governors and/or the Assembly of Parties[71] to express their findings regarding technical compatibility in the form of recommendations only; they do not confer a veto power.

107. MCI Lockheed also alleges that Comsat's role in Intelsat could inhibit technical and service innovation and cost reductions for any domestic system owned or operated by Comsat. It points as an example to the circumstances that Comsat's proposed satellites are a variant of the Intelsat IV design, and it is thus obligated to reimburse Intelsat partially for its rights in research and development on a retroactive, pro rata basis, which in turn would redound to Comsat's benefit. Of course, that is also true to the extent that anyone else is using a technology (such as the Hughes Telsat satellite)[72] based in part on technology for which Intelsat has acquired ownership or licensing rights.[73] The circumstance that Intelsat is able retroactively to reduce its research and development costs by sharing them with others taking advantage of the technology, is of some benefit to Intelsat and consonant with the U.S. objectives set forth in section 102 of the 1962 Act. Further, to the extent that there may be some concern that an applicant may achieve some more advantageous position over other applicants, such as reduced costs, where a technology in which it has some patent rights is used by itself or others,

[70] Article XIV of the Intergovernmental Agreement establishing definitive arrangements for Intelsat.

[71] The Government, rather than Comsat, sits in the Assembly of Parties.

[72] While Hughes and Intelsat have not yet settled upon what technology in the Telsat satellite is derived from Intelsat technology and data or the terms of the royalty, Hughes has not disavowed its obligation to reimburse Intelsat.

[73] Under Article 17 of the operating agreement of the definitive arrangements, Comsat would have no greater rights than any other domestic applicant insofar as disclosure of inventions and technical information for domestic satellite purposes, whether the ownership rights were retained by a contractor or acquired by Intelsat. Of course, in any instance where the Board of Governors has discretion to deviate, or would be party to the settlement as to "fair and reasonable terms," Comsat's vote could be subject to Government instructions.

Comsat appears not much different from Hughes—except that Comsat paid for its rights whereas Hughes is paid by others. Fairchild has an advantage over other applicants stemming from a different factor, i.e., that NASA is paying it over $25 million for research and development of the ATS–F satellite on which the technology of Fairchild's proposed domestic satellite is largely based.[74] Lockheed and Hughes have had other research and development contracts paid for by NASA and/or defense agencies. Indeed, all of the applicants are the recipients of the benefits of satellite and launch vehicle research and development financed by NASA and other Government agencies, and ultimately by all U.S. taxpayers.

108. Insofar as alleged inhibition of technical innovation by Comsat is concerned, it bears noting that Comsat itself has improved on the Intelsat IV technology through cross-polarization techniques and lightweight filters, achieving twice the transponder capacity in essentially the same size spacecraft. For other experimental programs underway at the Comsat Laboratories, for international and proposed domestic use, see footnotes 20 and 21 in the appendix. Moreover, quite apart from reduced costs to Comsat, the choice of the modified Intelsat IV technology appears on its merits to be well within the range of reasonable business discretion. This proposed satellite lacks some of the risks allegedly associated in the higher capacity satellites proposed by MCI Lockheed and Fairchild, and may offer some advantages over the use of 12-transponder primary satellites for any entity that has traffic requirements for a larger number of primary transponders.[75]

[74] NASA's contract with Fairchild for research and development of ATS–F and ATS–G is on the order of $56.6 million, of which the larger portion is for ATS–F. While NASA makes ATS technology available without patent charge, Fairchild has a head start on others since it is the entity doing (or subcontracting out) the research and development whereas others must wait until the results are made available by NASA. Moreover, Fairchild would have some practical engineering experience with the technology as opposed to the theoretical knowledge of others.

[75] There appears to be no significant difference, in terms of efficient use of orbital space and spectrum, between the use of one 24-transponder cross-polarized satellite and the use of two 12-transponder satellites (with cross or orthogonal polarization) in one orbital location. Moreover, there is general consensus among the parties that the investment per channel in orbit is essentially the same for 12- and 24-channel satellites, though the total investment per satellite is significantly higher for 24-transponder satellites. Thus, there would be a cost advantage in using a smaller satellite if an applicant had prospects of obtaining only enough revenue producing traffic to fill 12 or fewer transponders. Of course, other factors might enter into the choice between the use of one 24-transponder or two 12-transponder satellites. For example, a launch failure in the case of one 12-transponder satellite has no bearing on the possible loss of the other, whereas a launch failure of the 24-transponder satellite entails a total loss of all transponders and launch costs.

109. Further, on the question of potential technical and service innovation by Comsat in the domestic field, it seems fairly obvious that Comsat has derived experience from its pioneering role in Intelsat, and attracted technical talent, of a type presently unexcelled by any other domestic applicant. It has the potential for making a very significant contribution toward the innovative development of this technology domestically, if it should elect to serve the genral public rather than A.T. & T. Without the constraining factor of having A.T. & T. as a domestic customer, we see no compelling reason why Comsat, simply because of its role in Intelsat, would not compete to the full extent of its ability in the provision of specialized and new services within Conus, which offers a much larger market potential than that available to Comsat internationally.[76]

110. It would run counter to the promotion of that goal to place restrictions on Comsat's domestic service offerings of the nature suggested by some parties to this proceeding. The Department of Justice has recommended that Comsat, as well as A.T. & T., be precluded from offering service to the television networks. The latter have stated that they would "favor the opportunity to consider any proposals submitted by A.T. & T. as well as the proposals submitted by other applicants" (appendix, paragraph 43). However, A.T. & T. has advised the networks that it does not intend to respond to their most recent request for proposals. In the event that Comsat should elect to serve the general public rather than A.T. & T., we see no public interest reason for further narrowing the networks' choice of options by excluding Comsat. It is not beyond the realm of possibility that Comsat might out-do its competitors and make an offer which the networks would consider most technically and/or economically advantageous to them.

111. While Western Union seeks to exclude Comsat from the domestic sphere, it urges that Comsat should, in any event, be permitted to operate only as a carrier's carrier. It relies on an alleged congressional intent, as expressed in sections 103(7) and 305(a)(2) of the Communications Satellite Act of 1962, to so limit Comsat's participation in international communications satellites, and claims that there is no reason to suppose a different intent in the domestic field. Though it appears dubious that the cited sections on their face warrant so narrow an interpretation, there are policy and legal differences between the international and domestic satellite situations.

[76] We recognize, of course, that A.T. & T. presently owns 29 percent of Comsat's stock and elects 20 percent of its board of directors (i.e., three out of 15 members), and further that it is the largest international customer of Comsat. However, the requirement for a separate corporate entity to engage in the domestic satellite operations and the limitation to service within CONUS only (see paragraph 116) will tend to reduce the significance of the corporate and commercial ties. Moreover, in view of Comsat's monopoly position as the U.S. chosen instrument in Intelsat, A.T. & T. has no choice but to obtain international communications satellite service from Comsat even if Comsat's activities in the domestic field cause it displeasure. While A.T. & T. does have the alternative of resorting to international cables to some extent, the appropriate division of traffic between international satellites and cables is a matter the Commission can address in the context of authorizing the cables. See, e.g., A.T & T., 13 FCC 2d 235 (1968); Comsat, 29 FCC 2d 252 (1971); Statement of Policies and Guidelines in Docket No. 18875, 30 FCC 2d 571 (1971); Comsat 32 FCC 2d 103 (1971).

112. When the 1962 Act was enacted, it was generally assumed that it would be technically and economically impracticable (particularly with the use of random-orbit satellites) to have a multiplicity of competing international systems, or to authorize a separate space segment to each of the competing U.S. international carriers. Congress determined that "U.S. participation in the global system shall be in the form of a private corporation," Comsat, which it authorized to "furnish, for hire, channels of communication to U.S. communications common carriers and to other authorized entities, foreign and domestic" (sections 102, 201(c)(7), and 305(a)(2)). Moreover, the Commission itself adopted an "authorized user" policy in the international field which generally limits U.S. authorized users to terrestrial international carriers except in special cases. Comsat, 1 FCC 2d 82, 85; Comsat, 2 FCC 2d 41, 45. By contrast, in the 1970 Report the Commission concluded as a matter of law (22 FCC 2d at 86, 128–133) that the authorization of domestic satellite facilities is governed by the Communications Act of 1934, which affords greater flexibility. The Commission also proposed not to apply its international "authorized user" restriction in the domestic field as a matter of policy (22 FCC 2d at 96, paragraph 27).

113. Since we have decided to adopt an open-entry policy in the domestic field, it makes scant sense to permit all competing common carrier entrants, except Comsat, to offer communications services directly to the using public. Neither Western Union nor any other carrier applicant except A.T. & T. has indicated a desire to lease satellite facilities from Comsat. Moreover, to deny Comsat direct access to other consumers would foreclose any independent contribution it might make in providing new or different services to the public. As set forth in paragraphs 133–141 below one of our principal policy objectives here is generally to encourage the provision of end-to-end service to the customer by domestic satellite system licensees, and we would expect Comsat to make every effort to promote that objective in the event that it elects to serve the general public rather than A.T. & T.

114. MCI Lockheed has, however, made one troublesome argument. It claims that there would be potential conflicts of interest in the event that Comsat should provide domestic service to Hawaii, Alaska, Puerto Rico and other offshore points both via Intelsat facilities and also by means of its own domestic facilities. It is obviously difficult for any

entity to engage in full direct competition with itself, particularly where it may be subject to conflicting motivations. For instance, Comsat's decisions as to what type of facilities and services would be offered to points like Alaska and Hawaii on its domestic system, or whether traffic should go via international or domestic facilities, might be influenced by its stake in Intelsat (e.g., the status of its voting power or its existing investment in international earth stations) [77] rather than solely by the consideration of what is in the best interest of those domestic customers. Moreover, as manager for Intelsat, Comsat has an obligation to endeavor to maximize the use of the global system. The possibilities for conflicts of interest between Comsat's international and domestic roles, and the potential for adverse consequences to the public, appear much greater in any area served by dual Comsat facilities than they do in Conus. However, if any domestic authorization to Comsat were limited to Conus and conditioned upon a prohibition against establishing domestic earth stations in any overseas area served by Intelsat facilities, this particular cause for concern would be virtually or entirely eliminated. Of course, Comsat could still provide domestic service via Intelsat facilities in such areas, in competition with any independent applicant authorized to serve Alaska, Hawaii, Puerto Rico or some other overseas domestic point.

115. We turn now to the reverse side of the situation, whether the authorization of domestic satellite facilities to Comsat might adversely affect its participation in Intelsat or the furtherance of the objectives set forth in section 102 of the 1962 Act. The Comsat applications contemplate an initial investment on the order of $244 million for its proposed multipurpose system with approximately 132 earth stations. There is, of course, the possibility that a loss of most or a substantial portion of an investment of that magnitude might have a serious impact on its financial qualifications insofar as Intelsat is concerned, as well as adversely affect the stockholders who invested in it on the basis of its Government-sponsored role in the global system. However, the authorization of minimum facilities under Open Entry Option II would reduce the size of the investment risk, particularly since extensive space segment and earth station facilities for the use of the television networks will not be authorized until they have definitely decided to convert to satellite transmission and have selected an entity to provide such service. Moreover, the size of the proposed earth station investment would be substantially reduced since we will afford local broadcast stations the option of owning receive-only earth stations, as the Network Affiliates have requested (see paragraphs 120–125). Further, if Comsat should elect to serve only A.T. & T., the risk of loss would be relatively small.

116. In any event, Comsat's liability for loss due to a domestic satellite venture could be limited by a condition requiring the formation of a separate subsidiary corporation to engage in this enterprise, e.g., with separate officers, separate operating personnel, separate books of account, but permitting access to the services of the Comsat laboratories and other technical personnel on charges that are reasonable, as well as fair and equitable, to Comsat's domestic subsidiary and Intelsat. The Commission should so condition any domestic satellite authorization to Comsat. Comsat has excess capital (presently having unused capital on the order of $90 million, almost half of its original paid-in capital), and it has no debt. The Commission could also limit the amount of equity capital acquired for Intelsat purposes that Comsat could devote to financing a separate domestic subsidiary corporation, pursuant to its powers under section 201(c)(8) of the 1962 Act, in order to insure that the Comsat investment in such corporation is consistent with the objectives of that Act.[78] Moreover, separate corporate organizations should tend to ameliorate the potential substantive conflict of interest with the Intelsat aspect of Comsat's operations.

117. Finally, if Comsat were to be restricted solely to participation in Intelsat, the possibility of a dwindling role in that organization under the definitive arrangements, coupled with the lack of an opportunity for growth in the domestic field, might adversely affect its incentive to innovate in service and technology as well as its ability to attract top technical talent to the long-run detriment of Intelsat. Entry into the domestic field to serve others than A.T. & T. would permit Comsat to experiment with different service offerings, which might beneficially be put to use for Intelsat purposes. Indeed, the experience of competing with other domestic space segment licensees might spur Comsat on to more efficient and cost effective operations in both the international and the domestic fields. Moreover, even if Comsat should elect to serve only A.T. & T., it would have an opportunity to experiment with different technology as well as for substantial growth.

118. On balance, and in the light of all the foregoing, it is our judgment that the public interest would be better served by placing appropriate special conditions on any initial domestic satellite authorization to Comsat, rather than disqualifying it altogether from entry into the domestic field.

119. In short, while none of the applicants is free from challenge, there is substantial merit to each of their proposals. The public might suffer some potential loss if any were to be disqualified at the outset without an opportunity to show what contribution it might make toward the effective and innovative exploitation of this technology in the national interest. We have ample authority to impose conditions designed to minimize the possibility of adverse consequences to the public in those instances where a potential conflict of interest or other drawback appears most serious, as well as to promote affirmatively its policy goals in this field. Any authorized space segment would have a relatively short life (estimated, perhaps conservatively, to run from 7–10 years). If any applicant should abuse the privilege of entry, we can decline to authorize incremental or second generation satellites or impose such further conditions as then appear necessary or appropriate to protect the public interest or to effectuate policy objectives. In the circumstances, we find and conclude that the public interest would be best served by affording an opportunity for all of the pending system applicants to proceed initially, subject to the conditions and requirements set forth in this Second Report and Order and any that might be specified in the particular instrument of authorization.

C. EARTH STATION OWNERSHIP, ACCESS, AND INTERCONNECTION

1. Ownership

120. As set forth in the Appendix (paragraphs 65–70), there is fairly widespread support in the record for the Commission's proposal in the 1970 report to adopt a flexible ground environment policy which would permit, among other things, user ownership of special purpose earth stations. The user ownership issue is most immediately presented by the Phoenix "prototype" application for a receive-only earth station (see paragraph 33 above), and by the applications for receive-only earth stations filed by CATV interests (paragraphs 30–32 above).

121. The Phoenix "prototype," which has the strong support of the three Network Affiliates Associations, contemplates a cooperative, joint-ownership venture by local television broadcast stations to gain direct access to all programing distributed via satellite (both network and independent) that such local stations have been authorized to broadcast. Existing and future independent stations would be permitted to participate in ownership or to use the earth station on a nondiscriminatory basis

[77] For example, the Network Affiliates note that Comsat's proposal would locate a receive-only at Talkeetna, Alaska (where it has an international earth station), with microwave interconnection to Anchorage and Fairbanks. The Network Affiliates state that this may be adequate for public message service, but these two cities (located about 250 air miles apart) should have their own receive-only stations for television reception purposes.

[78] Section 201(c) of the 1962 Act provides that the Commission, "in its administration of the provisions of the Communications Act of 1934, as supplemented by this Act, shall * * * (8) authorize the corporation to issue any shares of capital stock, except the initial issue of capital stock referred to in section 304(a) or to borrow any moneys, or to assume any obligation in respect to the securities of any other person, upon a finding that such issuance, borrowing, or assumption is compatible with the public interest, convenience, and necessity and is necessary or appropriate for or consistent with carrying out the purposes and objectives of this Act by the corporation; * * *."

without ownership participation. Public broadcasting stations could use the earth station without charge, but would—like other users—supply their own terrestrial interconnection facilities. Phoenix and the Affiliates Associations claim that local ownership would enhance the broadcasters' independence and flexibility to determine their own program schedules, free them from carrier or network determined construction timetables and site selections (asserted to be especially important for stations in sparsely populated areas), and provide a broader financial source of earth station investment which would not be included in the rate base of the space segment carrier (see Appendix, paragraphs 65–66).

122. It seems clear that local broadcast stations (even those that are network affiliated) have interests and public responsibilities that differ somewhat from those of the network companies or any carrier that might have such companies as customers. Affording broadcasters the option of local ownership of receive-only earth stations would be consistent with long-standing Commission policy in the broadcast field. The table of television channel assignments is "predicated upon the social desirability of having a large number of local outlets with diversity of control over disseminating sources" (Rules re Microwave-Served CATV, 38 FCC 683, 699–700) and reflects the Commission's view in paragraph 79 of the Sixth Report and Order on Television Assignments (41 FCC 148, 171–172) that "as many communities as possible should have the opportunity of enjoying the advantages that derive from having local outlets that will be responsive to local needs." Local ownership of earth stations might facilitate broadcaster access to non-network sources of programing, as well as the formulation of new national, regional or specialized networks. To this extent, it would accord with the policies underlying § 73.658 of the Commission's rules relating to affiliation agreements and network program practices (e.g., paragraph (d) prohibiting option time, paragraph (e) preserving the local affiliate's right to reject network programs, paragraph (j) concerning network syndication and program practices, and paragraph (k) incorporating the prime time rule). It might also further the Commission's policy of promoting new and diverse sources of programing for independent stations. In addition, local ownership would comport with the Commission's stated objective in the 1970 report to give serious consideration to possible uses of the satellite technology in the domestic field as a means of achieving new communications services, as well as expansion in the scope and flexibility of existing services.

123. Accordingly, regardless of whether the commercial network companies decide to convert to satellite transmission, we find that the public interest would be served by a policy permitting the authorization of receive-only earth stations requested by local broadcasters to gain access to diverse programpanies do decide upon program transing. In the event that the network commission via satellite, we further find that the public interest would be best served by conditioning the authorization of facilities to the chosen carrier upon a requirement that the matter of receive-only stations be handled independently of any tariff offering (or network-carrier arrangement) to the network companies for program transmission service. This would accord local stations the option of applying for receive-only earth stations, either directly or by application of an independent carrier on their behalf, or of requesting the space segment carrier to provide earth station service. If the space segment carrier deals directly with the local stations, rather than the network companies, we think that this would be more apt to result in receive-only earth station facilities tailored to the requirements of users in the particular area, at sites of their choice, and on their desired time schedule. Such a requirement might also stimulate the space segment carrier to be more attentive to the program transmission needs of nonnetwork program origination sources desiring access to local stations.

124. While it may be more simple administratively for the space segment carrier to deal with the network companies concerning receive-only facilities, there is no apparent reason why direct dealing with the local stations (possibly with the assistance of the Affiliates Associations) would impose technical difficulties. The prototype applicant, Phoenix, has stated that user owners would take all necessary and appropriate steps to make these facilities technically compatible with satellite and ground facilities operated by the space segment carrier, and would cooperate in establishing specifications, planning construction, testing and operation of such facilities. Moreover, one system applicant, MCI Lockheed, states that it would assist broadcast stations and CATV systems desiring to own their own earth stations by providing engineering standards and specifications. MCI Lockheed is also prepared to offer receive-only facilities for purchase or long-term lease on a turn key basis, with a maintenance contract and option to purchase provisions in the lease, if desired. It is further willing to cooperate with several users (e.g., network affiliates, independent stations, CATV systems, etc.) to establish joint lease or ownership arrangements.

125. The Phoenix prototype is concerned solely with television broadcast stations. We think that any authorization of such arrangements should be upon condition that a reasonable opportunity be afforded for nondiscriminatory access to such stations by other local entities desiring receive-only service (e.g., local radio stations, the press, and possibly CATV systems) if there are no other earth station reception facilities in that area to meet their requirements and the space segment operating with such broadcaster-owned earth stations has transmissions for other users.[79]

126. It may be unlikely that CATV systems would seek access to broadcaster owned receive-only earth stations on any extensive basis.[80] They have not requested such an opportunity in this proceeding. Rather, the position of the CATV applicants and NCTA is that CATV systems, and CATV carriers who are not affiliated with the space segment licensees, should have an opportunity to own and operate receive-only earth stations with one or more satellite systems (see Appendix, paragraphs 67–68). Since broadcaster ownership of receive-only earth stations will be permitted, we see no reason why CATV interests should not be accorded a similar opportunity to own receive-only earth stations—both for reception of programing distributed by Hughes and any transmitted by common carriers for other CATV program sources. While the Hughes CATV proposal contemplates Hughes-owned earth stations, it has stated that such ownership is not essential in every case. Hughes has no objection to CATV systems owning earth stations when desired, and is willing to guarantee access to programing distributed on its space segment facilities by CATV owned receive-only earth stations at a lower rate than that charged to CATV systems not owning earth stations. We will so condition any authorization to Hughes.

127. As previously indicated, under Open Entry Option II, a CATV-owned earth station could receive CATV programing transmitted by a common carrier utilizing the same space segment as Hughes, without the expense of adding another earth station antenna to operate with a different satellite.[81] Any authorization to Hughes will be upon the further condition that any common carrier sharing the same space segment and offering program transmission service to other CATV program originators shall be ac-

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[79] As the Department of Justice has recommended with respect to dedicated satellites (Appendix, paragraph 34), we will require that any user owned, joint earth station venture has reasonable capacity to meet all firm commitments. However, once all the earth station capacity is committed, existing users will not be required to reduce their use to make room for latecomers. Rather, with each increment in earth station capacity or upon the advent of second-generation earth stations, outsiders shall again be afforded an opportunity on equitable terms to become members of the joint venture or to use the earth station on a nondiscriminatory basis without ownership participation.

[80] Since the networks alone have a stated requirement for 11 regular and 11 additional weekend transponders, broadcaster-owned receive-only earth stations might well operate with different satellites from those used for the Hughes CATV distribution proposal, or other satellites initially authorized in space segment A. However, conceivably there might be some CATV program transmissions from other sources on the same satellites used for broadcast program distribution purposes.

[81] This is on the assumption that the satellite orbital locations used by Hughes and common carriers sharing the same space segment will be separated by three degrees. Thus, a nontracking receive-only earth station could operate with the satellite used by Hughes and either one or the other of the two additional satellites. However, the receive-only earth station could not operate with all three satellites without adding an antenna.

corded reasonable access to all transmit-receive and receive-only earth stations owned by Hughes on an equitable and nondiscriminatory basis; provided, however, that access to Hughes-owned transmit-receive earth stations need not be afforded if such carrier has transmit-receive facilities capable of obtaining access to Hughes and CATV-owned receive-only earth stations, at reasonable cost. In the event that there is no other common carrier sharing the same space segment and offering program transmission service to other program originators in a manner such that it can be received at the earth stations described above without the addition of another antenna, we think that any authorization to GTE should include a requirement that it offer such service. Further, as in the case of broadcaster-owned receive-only earth stations, we will authorize CATV-owned receive-only earth stations upon conditions similar to those set forth in paragraph 125.

128. It may further be desirable in some circumstances to afford other special-purpose users, for example a business entity such as GE (see footnote 39) that might be furnished transponders by a space segment carrier for in-house communications purposes, an opportunity to own earth stations, either receive-only or transmit-receive (subject, of course, to appropriate technical coordination with the space segment carrier). Such a user might have communications requirements at points located at such a distance from the multipurpose earth stations of the space segment carrier that the savings in terrestrial interconnection would make earth station ownership economically advantageous to the user. The same might hold true for a specialized terrestrial common carrier such as Datran, if it were to use satellite transponders as an adjunct to its proposed terrestrial operations.

129. There are, of course, the concerns that a proliferation of independently owned earth stations might compound the difficulties of satellite-terrestrial interference coordination and dissipate any economies of scale in large multipurpose earth stations owned by the space segment carriers. However, if an earth station is to be established solely for the joint use of a particular group of similar users or for the exclusive use of a particular user, it makes little difference for coordination or economy of scale purposes whether the facility is owned by the users or the space segment carrier. Moreover, there are overriding reasons of public policy for permitting the option of broadcaster and CATV ownership of receive-only earth stations even if the space segment operator (whether common carrier or not) would prefer to perform this function. Nevertheless, we are of the view that the public interest would be served by an initial policy of not authorizing independent transmitting earth station facilities utilizing 4 and 6 GHz frequencies in any area reasonably proximate to a multipurpose transmit-receive earth station owned by the space segment carrier furnishing the transponders, except upon a showing that the authorization of independent transmission facilities is necessary in the public interest. The Hughes transmit-receive earth stations to be operated in conjunction with the program operating centers for its private CATV network operations fall in a separate category since Hughes is proposing to own, rather than to obtain from a common carrier, the space segment transponders.

130. A related, and perhaps more serious, concern is the possibility of a multiplicity of large multipurpose transmit-receive earth stations owned by different licensees utilizing the same space segment to serve the same metropolitan area (through associated terrestrial interconnection facilities). For example, all of the common carrier system applicants (except GTE) have applied for 4–6 GHz transmit-receive earth stations in the vicinity of New York City,[82] and all (including GTE) near Los Angeles, the two metropolitan areas now most heavily congested with terrestrial access facilities. Moreover, while the earth stations can be expected to have a longer life than the satellites, they may become obsolete by the time of second-generation satellites or require extensive modification to operate with such satellites. Further, considerations such as curtailing initial excessive capacity or undue investment risks by some existing carriers (see paragraphs 65–73 above) seem equally applicable here. And, finally, there is the concern about coordination with existing and future terrestrial systems at 4 and 6 GHz in heavily congested areas.

131. In the circumstances, we think the public interest would served by adoption of an initial policy requiring reasonable sharing of 4–6 GHz transmit-receive earth stations by common carriers sharing the same space segment. Each participant in a joint space segment may be authorized its own earth stations to operate with its share of the satellite transponders, subject to the following conditions:

(a) Common carrier participants in space segments A and B (paragraph 77) shall proportionately own on a cost-sharing basis a common transmit-receive earth station in any area where another participant in the same space segment has proposed a transmit-receive earth station in reasonable proximity.

(b) Each such space segment owner may be authorized to own an individual earth station in any area where no other participant in the same space segment has applied for a transmit-receive earth station in the vicinity, or for other good cause shown.

As in the case of shared space segments, each common carrier participant sharing a transmit-receive earth station would be licensed by the Commission. Moreover, a single entity would be authorized to perform managerial functions.

[82] An operating company of GTE has applied for a transmit-receive earth station near Indiantown Gap, Pa., somewhat more remotely located from New York City than those of the other applicants.

132. In short, we conclude that the public interest would be well served by adopting GE's suggestion (appendix, paragraph 70) that the Commission make possible a variety of earth station ownership patterns to afford the most diversified access to space segments, tempered only by constraints of a truly practical nature.

2. Access and interconnection

133. The Commission's proposal in the 1970 report to permit space segment carriers to deal directly with customers for their services (i.e., not to apply the international so-called "authorized user" eral support in the record. The Commission further proposed (1970 report, paragraph 27) a flexible policy with respect to access to earth stations and interconnection, which would permit new construction by the system operator or users, the purchase or lease of access facilities from terrestrial carriers, and arrangements between satellite and terrestrial carriers for joint through service. The only real problem that has arisen in this respect has to do with the terms on which terrestrial carriers shall interconnect with satellite carriers, and other carriers or users with earth station access facilities.

134. The problem is threefold, exemplified in one aspect by the situation of Comsat.[83] Comsat prefers not to construct its own terrestrial interconnection facilities to afford access to earth stations. In the case of Comsat's New York City transmit-receive earth station (located near Southbury, Conn.), A.T. & T. has applied for terrestrial microwave facilities for Comsat's use. Similarly, an operating company of GTE has applied for microwave facilities to afford access to Comsat's Los Angeles earth station (located near Santa Paula, Calif.). However, neither is willing to provide such interconnection on a long-term, fixed price, carrier-to-carrier basis, which is what Comsat desires. Rather, they are insisting that the interconnection facilities be leased by Comsat on a tariff basis. Thus, the controversy here is not of a technical nature, since the microwave facilities for which A.T. & T. and GTE have applied would be the same whether furnished to Comsat on a tariff or carrier-to-carrier through route arrangement.

135. Another facet of the problem is illustrated by GTE. The GTE operating companies have applied for terrestrial microwave between their respective earth stations and GTE operating territories and/or the landline network facilities of the Bell System. A.T. & T. claims that the GTE companies have not yet supplied sufficient information to enable a decision as to whether such interconnection will be permitted (see appendix, paragraph 74). It states: "Before A.T. & T. is prepared to interconnect with another carrier for provision of a service in which

[83] The RCA applicants also proposed to use earth station terrestrial interconnection facilities owned by others in CONUS. However, so far they have not indicated that they face any difficulty as to interconnection terms.

A.T. & T. participates, especially switched service, much more detailed information and justification of costs and possible penalties to be incurred will be required to permit an evaluation of the benefits to be realized."

136. The third respect in which a problem may arise has to do with the circumstances that in most instances (except perhaps for receive-only earth stations) the entity—whether space segment carrier, other carrier, or user—furnishing interconnection facilities between an earth station and the premises of the user may desire or find it necessary to obtain "local loop" service through access to the exchange facilities of a local telephone carrier.

137. Effective development and use of satellite technology and the service potential thereof depend upon the ability of all licensees to deliver such services to their customers. By virtue of the Bell System's dominant control of the terrestrial facilities required for this purpose, Bell would have a distinct advantage over all licensees in the promotion and sale of services (particularly if offered directly to the public) and, in fact, will be in a position to inhibit or obstruct the marketing efforts of such other licensees. The result could well be a nullification of the Commission's policies and objectives which are intended to provide maximum opportunity for development of competitive services.

138. In the 1970 report (paragraph 27), the Commission stated its "expectation that existing carriers will not thwart or hinder the development of new and expanded common carrier services envisaged by this policy by the imposition of arbitrary restrictions on interconnection or through route arrangements or so-called exchange of facilities among carriers—established and new—or other means of accomplishing the desired objective of providing service directly to the customer." Moreover, in the Specialized Carrier decision, the Commission reaffirmed the view that "established carriers with exchange facilities should, upon request, permit interconnection or leased channel arrangements on reasonable terms and conditions to be negotiated with the new carriers" (29 FCC 2d at 940). The Commission further stressed that "'where a carrier has monopoly control over essential facilities we will not condone any policy or practice whereby such carrier would discriminate in favor of an affiliated carrier or show favoritism among competitors'" (id.).

139. In agreement with the position of the Department of Justice, we think that the Commission has authority under sections 201(a) and 202(a) of the Communications Act (and other provisions such as sections 4 (i) and (j), 214, and 303) to adopt such interconnection policies in this rule making proceeding as it finds necessary or desirable to promote the public interest in the domestic satellite field, and to condition any satellite system authorizations upon compliance with such policies.[84]

140. In general, we believe that carriers should own, to the extent practicable, the facilities used to provide end-to-end services to their customers.[85] Accordingly, we think that satellite systems users (whether such entities be satellite system carriers, other carriers, or users) should themselves undertake any construction of new facilities required for access to earth stations. Where it is necessary or appropriate to use the terrestrial facilities and services of the Bell System or another terrestrial carrier, particularly where such terrestrial carrier has a ready supply of the necessary facilities, we think that such facilities should be subject to lease arrangements under terms which will promote the concept of end-to-end service by the satellite system or earth station carrier. Where a carrier-to-carrier through route arrangement is necessary for the provision of end-to-end telephone service (e.g., between A.T. & T. and GTE), we would expect such carriers to work out fair and reasonable arrangements for interconnection between their respective operating territories, with no unreasonable discrimination because of the circumstance that some of the traffic involved may have been partially transmitted over domestic satellite facilities. (However, see paragraphs 97–99 above.)

141. In the circumstances, the public interest would be served by a policy requiring that any existing carrier, as a condition to its use of satellites, shall make available to all other authorized users of satellites on reasonable and nondiscriminatory terms and conditions, subject to prior Commission approval, available terrestrial facilities and services that may be required by such other licensees to deliver their satellite services to their customers for such services. We will expect each existing carrier to submit with its application for facilities in accordance with this second report and order a full description and explanation of the kinds of arrangements it will make available to other satellite system or earth station licensees to meet their interconnection requirements. In no event shall the charges made by the Bell System to other satellite system or earth station licensees exceed: (a) In the case of local loop, the interstate tariff rates applicable to such loop; and (b) in the case of an interexchange channel at some other junction point on Bell System facilities under a leased channel arrangement, the charges shall be computed on a basis that is no less favorable than the basis used for the computation of interstate charges to A.T. & T.'s customers for service between the points involved or on the same terms that service between such points is made available to other carriers. Since we are retaining full jurisdiction over all aspects of this proceeding, we will at that time determine whether any more specific policy guidelines are necessary.

142. We further believe that the public interest would be served by the adoption of general requirements that:

(a) Any common carrier space segment offering communications satellite service to the public shall permit nondiscriminatory and equitable access to such space segment by means of earth stations authorized by the Commission to other carriers and users.

(b) Any common carrier earth station licensee shall permit nondiscriminatory and equitable access to such earth station facilities by means of terrestrial interconnection facilities authorized by the Commission to other carriers and users.

The requirements pertaining to access by others to user-owned space segment and earth station facilities have already been set forth in the discussion on earth station ownership (see paragraphs 125–127). The question of access by public broadcasting and other noncommercial educational users is discussed in section E (see paragraphs 153–162).

D. ALASKA AND HAWAII; ORBITAL ARC LOCATION ASSIGNMENTS

143. The 1970 report, in requesting each applicant to state whether the proposed system would be capable of providing service to Alaska and Hawaii, stated (paragraph 34(a)):

> We believe that national unity will be served if domestic systems have the capability of serving these two States, in the absence of overriding considerations to the contrary. Hawaii is presently receiving communications satellite service via the facilities of Intelsat, though not the type of broadcast program distribution that has been proposed in this proceeding, and we have authorized an earth station in Alaska. Our belief that domestic systems should be capable of serving Hawaii and Alaska does not

[84] Section 201(a) provides: "It shall be the duty of every common carrier engaged in interstate or foreign communication by wire or radio to furnish such communication service upon reasonable request therefor; and, in accordance with orders of the Commission, in cases where the Commission, after opportunity for hearing, finds such action necessary or desirable in the public interest, to establish physical connections with other carriers, to establish through routes and charges applicable thereto and the divisions of such charges, and to establish and provide facilities and regulations for operating such through routes." The matter of through routes was included among the issues in the notice of proposed rule making (22 FCC 2d 810, 811 (which referred to paragraph 27 of the 1970 report, 22 FCC 2d at 96–97)), and the parties have had an opportunity to be heard on this question. Section 202(a) makes it "unlawful for any common carrier to make any unjust or unreasonable discrimination in charges, practices, classifications, regulations, facilities, or services for or in connection with like communication service, directly or indirectly, by any means or device, or to make or give any undue or unreasonable preference or advantage to any particular person, class of persons, or locality, or to subject any particular person, class of persons, or locality to any undue or unreasonable prejudice or disadvantage."

[85] See All America Cables and Radio, Inc., 15 FCC 2d 1, 14.

reflect any view with respect to the continued use of Intelsat facilities. But unless the capability is built into the domestic facilities at the outset, the possibility of providing any service to these States by means of these facilities will be precluded.

144. For a more complete summary of the views of the parties on this issue, see paragraphs 96–106 of the appendix. In brief, the State of Alaska emphasizes its geographic remoteness from Conus, vast area, small population (with tiny rural pockets called "bush"), and need for comprehensive, inexpensive and reliable communications service, both intrastate and interstate. Against its pressing needs, the State claims that present communications facilities are inadequate or nonexistent. Construction of adequate new terrestrial facilities would be extremely expensive because of distance, mountainous terrain, and rigorous climatic conditions. While Intelsat service is of some value, the high cost and restricted access preclude material assistance. The State asserts that the provision of vitally needed, comprehensive, low cost and reliable communications services in Alaska, as well as between Alaska and Conus, is dependent upon realization of the potential in a domestic system. It desires to participate in a multipurpose system, serving the 50 States, to meet its fourfold communications requirements: (1) Intrastate voice, message and data services; (2) interstate voice message and data services; (3) instructional and educational television; and (4) commercial television. The State's analysis of pending applications tends to lead it to the view that the Comsat and RCA proposals offer the best potential for accommodating its needs, though the optional features in the Fairchild proposal would be particularly attractive to Alaska.[86]

145. The State of Hawaii also wants to be part of a domestic system at this time. It claims that rates between Hawaii and the Western States are more than double mainland rates for service between the most remote location in Conus (and nearly as high as rates between Hawaii and Japan); that Hawaii is not included in the low mainland night rates or provided with Wide Area Telephone Service or direct distance dialing; that TV transmission and other specialized services (e.g., data, facsimile) are so costly as to severely restrict their use; and that, while the State pays taxes to support CPB, Hawaii's public broadcasting stations will not be served by the low cost terrestrial interconnection to be provided by A.T. & T. to mainland public broadcast stations. Domestic satellites can provide interstate communications services to Hawaii at costs no longer related to distance and can afford it direct linkage throughout the United States. Unlike Intelsat or cable facilities connecting Hawaii with the west coast, communications via domestic satellites would no longer need to transmit Conus terrestrially (e.g., via A.T. & T. Long-lines) in linking the continental hinterlands and the east coast (e.g., New York and Washington) with Hawaii. It is not equitable, the State believes, that the citizens of Hawaii in using interstate communications must carry a heavier burden than citizens in other States for making Comsat or Intelsat profitable and for supporting cost-averaged international communications. The State says: "These objectives are national and the responsibility for achieving them should be shared equally by all."

146. All the proposed systems have the satellite capability of serving Alaska, and all but one (Comsat/A.T. & T.) to serve Hawaii. However, only two system applicants (Comsat and RCA Alascom) have applied for earth stations in Alaska and only three in Hawaii (Western Union, the RCA applicants and Comsat). The fourth applicant for an Hawaiian earth station, Hawaiian Telco, originally took the position that Hawaii should not be part of any domestic system at this time, and A.T. & T. then shared the same view.[87] Hawaiian Telco stated that new cables between Hawaii and the mainland are planned for 1973 and 1977. It further claimed that diversion of existing traffic from the Intelsat system would allegedly cause a loss to Comsat of about $10.3 million in annual revenues and a proportionate loss to Intelsat. It also asserted that the Intelsat IV Pacific satellite should make it possible for Comsat to have competitive rates and to provide TV service equal to that proposed by domestic system applicants. Comsat has not commented on the Intelsat aspect, either with respect to Alaska or Hawaii.

147. The RCA applicants urge that there is room for only one domestic satellite carrier in Alaska, and claim comparative hearing rights in the event that any other entity is authorized. They note that Alaska has a land area of some 586,000 square miles, a rigorous terrain and climate, and a 1970 population of only about 302,000 persons. The revenues and return in Alaska are asserted to be smaller than in Conus, and unit costs would be lower if it were part of a multipurpose system serving the 50 states (as urged by the State of Alaska). The RCA applicants claim that any substantial diversion of revenues to other carriers or systems, or fragmentation of the RCA Alascom market, would pose a severe threat to the future of public communications in Alaska.[88] An authorization to the RCA applicants would relieve other applicants from the obligation of serving Alaska, and remove certain constraints on their proposals (such as the selection of orbital locations capable of serving Alaska, and the need for spot beams to illuminate Alaska). Both the RCA applicants and the State itself request the Commission to reserve the more westerly orbital locations for a system or systems serving Alaska.

148. We find much merit in the comments of Alaska and Hawaii. These are both States of the Union, the equal and peers of all of the other States. Each has unique problems confronting it because of distance from the contiguous 48 States, or severity of climate or relative sparsity of population. Since we have stressed continuously our desire to see in what manner satellites can be used to resolve communications problems by providing services which are difficult or more expensive by terrestrial facilities, we believe the situation in Alaska and Hawaii offers a unique challenge and opportunity. As set forth below, we expect and will require pertinent licensees to make effective use of satellite facilities to serve the requirements of our two newest States.

149. Turning first to Alaska, we note that RCA Alascom has claimed a monopoly position insofar as service to or in Alaska via domestic satellite facilities is concerned. We need not treat this claim other than to note that the open entry policy adopted here does not exclude the possibility of other entry. On the other hand, we recognize that for the present at least, the market in Alaska is very thin but the communication needs are important to the State. We have also noted the State's list of fourfold communication needs for interstate and intrastate voice and message services, as well as for commercial, educational, and instructional television. It would appear that satellite facilities hold the greatest promise for satisfying those needs. We therefore require that RCA Alascom submit with its formal completed application, whether for Space Segment A or an independent system, a detailed plan setting forth:

(a) The number, locations, and schedule of installation of satellite earth stations proposed in light of the stated communication needs of Alaska;

(b) A detailed description of the space segment facilities which will most economically serve Alaska including the type of spot beam, if any, proposed or the reason for not proposing a spot beam;

(c) A detailed analysis of the most efficient and economical use which can be made of the Talkeetna earth station, i.e., whether it should be continued to be used to communicate via the Intelsat system or whether it be devoted to the domestic satellite service with international service to be provided indirectly until such time as traffic justifies a station devoted solely to international traffic;

(d) The basis upon which charges proposed for service over the system, both

[86] The State of Alaska has not had an opportunity to comment on the MCI Lockheed Alaskan proposal first submitted in its reply comments (see appendix, paragraph 99 and footnotes 42 and 43).

[87] However, see footnotes 19 and 26.

[88] The State of Alaska joins Comsat in disagreeing with RCA Alascom's contention that it is the only entity legally qualified to provide intrastate service in Alaska. The Alaska Public Utilities Commission in franchising RCA Alascom noted that the market was then too thin to warrant general authority to more than one land-lines carrier, but did not purport to foreclose the possibility of competition in the provision of some services should future circumstances permit. The State requests the Commission to reserve room for second generation satellites, e.g., along the lines of those proposed by Fairchild, to meet its needs more fully in the future.

interstate and intrastate, will be computed; and

(e) A statement from the appropriate authorities in Alaska with respect to the RCA Alascom proposal and how it meets the stated requirements of the State.

150. As noted, Hawaii presents different problems. As we read the comments submitted on behalf of the State the major concerns are, first, that charges for message communication service between it and the contiguous 48 States are entirely too high and that it does not enjoy services such as Wide Area Telephone Service (WATS) and Direct Distance Dialing (DDD). It also complains that television transmission and specialized services are much more expensive and that their use is restricted thereby. Here again, we find much merit to the concern of this State. We are aware that at present Hawaii is served by the Intelsat satellite system, as well as two cables to California. There is also pending an application for a third high capacity 840 circuit cable to be installed between Hawaii and California. In light of the comments of the Governor of Hawaii, we feel we must address the question of the role domestic satellites can play in providing Hawaii with economical and efficient service. In this connection, it is relevant to point out that whereas in the contiguous 48 States domestic satellites hold their greatest promise in the nonmessage field, this does not necessarily appear to be the case with respect to Hawaii. The burden of the comments from Hawaiian officials appears addresssed to voice message services. We will require that A.T. & T. and GTE/Hawaiian Telco address specifically the request of Hawaiian officials that Hawaii be provided domestic services such as WATS and DDD and be integrated into the general domestic rate pattern, including the manner in which these things might be done, the time frame for accomplishing them, and the cost thereof as well as the rate schedules to be applied. If A.T. & T. and GTE/Hawaiian Telco are of the opinion that for such services it would not be feasible to include Hawaii in the general domestic rate pattern, then some alternate proposals for giving due recognition to Hawaii's special requirements should be presented. In this connection the feasibility of principal reliance on a domestic satellite system to meet Hawaii's service requirements should be considered in light of the fact that transmission via satellite is not sensitive to the distance between earth stations and the claim that its use for domestic services would not involve costs appreciably higher than terrestrial facilities. In any event, we wish to make it clear that proposals for service to Hawaii are and will be considered an important public interest factor in connection with the domestic satellite proposal of the applicants involved.

150a. On March 6, 1972, the Commission received a letter dated February 29, 1972, from Governor Luis A. Ferre of the Commonwealth of Puerto Rico, raising substantially the same matters which were of concern to the Governor of Hawaii. This is readily understandable as there are numerous similarities in the two situations. Each is an island area at a considerable distance from the 48 contiguous States; each is served by Intelsat and cable facilities (there are 3 U.S. cables serving the Puerto Rico-Virgin Island area and beyond as against 2 cables from the mainland United States to Hawaii). In each case, rates to the contiguous States are very much higher than between points within the contiguous States; and television service is provided only via Intelsat facilities at rates generally applicable to international service. While Puerto Rico is not a State of the Union, its citizens are citizens of the United States and the provisions of the Communications Act of 1934 and the Communications Satellite Act of 1962 apply to Puerto Rico just as to any State. In view of all of the foregoing conclusions, we shall request A.T. & T. as well as the applicants proposing to serve Puerto Rico and the Virgin Islands to address each of the matters set forth in paragraph 150 above with respect to Hawaii as if fully set forth again in this paragraph.

151. It should be noted at this point that the aforementioned conclusions with respect to domestic satellite service for Alaska and Hawaii were reached only after giving careful consideration to the fact that domestic satellite service between the 48 contiguous States and Alaska and Hawaii is now being provided via the facilities of Intelsat and evaluating the potential impact of the loss of such traffic or any part thereof to the Intelsat system. In this connection it must be borne in mind that any domestic system authorized pursuant to this policy statement will probably not be operational until some time in late 1974 or early 1975. According to current estimates the volume of traffic handled via Intelsat facilities should, by the end of 1974 or early 1975, reach 17,064 one-half circuits. This represents an increase of 192 percent over the volume handled at the end of 1971. Furthermore, even if one were to assume that all traffic between the contiguous 48 States and Hawaii and Alaska were to be lost to the Intelsat system at that time, current Intelsat estimates show that this would account for only 1,046 half-circuits out of a total of 17,064 half-circuits, or 6.1 percent of Intelsat's estimated 1975 traffic. Furthermore, it is clear from the draft of the Definitive Arrangements now being ratified by various nations of the world that the prime objective of Intelsat is "the provision, on a commercial basis, of the space segment required for international public telecommunication services * * *" It is true that domestic services between areas separated by areas not under the jurisdiction of the State concerned, or by the high seas, are considered on the same basis as international public telecommunications services. However, as the record of the Intelsat Conference shows, this provision was added as a special exception to meet specific requirements of a certain number of members of Intelsat. Furthermore, as is set forth above, satellite service requirements, particularly in Alaska, include intrastate needs which may not readily come within the Intelsat definition of international public telecommunication services. Finally, we have sought the views of Department of State insofar as the foreign policy aspects of this matter are concerned and have been advised, in essence, that if the Commission were to decide on other considerations that Alaska and Hawaii should be included in the domestic system, such decision would not necessarily be opposed by the Department.

152. In view of the foregoing circumstances, it does not appear to us that the course proposed herein is inconsistent with this Government's obligations to Intelsat. On the other hand, there are very substantial potential benefits which can reasonably be expected to be realized by the provision of service to Alaska and Hawaii from the contiguous States via a domestic satellite system. Indeed, to exclude Alaska and Hawaii from domestic satellite system service offerings would appear to violate the mandate in section 307(b) of the Communications Act that "the Commission shall make such distribution of licenses, frequencies, hours of operation, and of power among the several States and communities as to provide a fair, efficient, and equitable distribution of radio service to each of the same." Finally, it should be understood that the decision herein does not necessarily bar the use of Intelsat facilities to provide service between the contiguous States and Alaska and Hawaii. In those instances where carries can demonstrate that considerations of the efficiency, economy and quality of service would better be served by reliance on Intelsat rather than a domestic system they, of course, would be authorized to provide such service.

152a. The assignment of orbital arc locations will be made by subsequent order of the Commission. We will assign orbital locations for satellites authorized to serve Alaska and Hawaii [89] in that portion of orbital arc that is five degrees or more west of the orbital locations that have been selected by Canada and is capable of illuminating those States as well as Conus. Other authorized satellites will be assigned orbital locations in that portion of the orbital arc that is five degrees or more east of the Canadian locations and is capable of illuminating Conus. The orbital locations for satellites authorized to utilize 4 and 6 GHz frequencies, in whole or in part, will be separated by no more than 3° (or allow for intervening assignments separated by 3°) unless good cause is shown for a wider separation. In assigning orbital arc locations, the Commission would en-

[89] Deleted.

[90] In the event that the networks should select Comsat to provide program transmission service, any authorization to Comsat will be upon condition that the earth stations in Alaska and Hawaii be licensed to local broadcasters or an independent carrier (see paragraphs 110, 114).

deavor to make maximum allowance for the authorization of future satellites utilizing 4 and 6 GHz frequencies. The assignment of any orbital location for use by a particular satellite shall not grant the licensee any right to the use of that orbital location for another satellite.[91] Nor shall the initial assignments preclude the Commission from changing orbital location assignments during the life of the initially authorized satellites, as required by the public interest, convenience or necessity.[92]

E. TERMS OF ACCESS BY PUBLIC BROADCASTING AND OTHER EDUCATIONAL INTERESTS

153. The 1970 Report (paragraph 34(b)(1) and (2)) requested applicants proposing broadcast program transmission to state the terms and conditions under which domestic satellite facilities would be made available for noncommercial educational networks. Noting that some parties to the proceeding, such as Comsat and the ABC network, had offered to provide satellite channels to public broadcasting without charge, the Commission said: "We believe this to be in the public interest" (22 FCC 2d at 101). The Commission also requested all applicants for multipurpose or specialized systems to indicate the terms and conditions under which satellite services would be available for data and other usage in meeting the instructional, educational, and administrative requirements of educational institutions.

154. The positions of the parties on this issue are summarized in the appendix (paragraphs 81–91). In brief, the Corporation for Public Broadcasting (CPB) and the Public Broadcasting Service (PBS) urge that domestic satellite service for a minimum public broadcasting network (both TV and radio) should be provided without charge.[93] The rationale is essentially as follows:

> The American people have invested more than $20 billion in the space program. Communications satellite technology is derived from that investment. The public thus has a real and direct interest in the cost-savings inherent in the satellite technology. As the submissions in this docket indicate, the potential cost-savings are substantial. [Footnote omitted.] The bulk of these savings will accrue in any event to private industry. We ask only that a small portion be used to provide the American people with a partial return on their investment, in the form of free interconnection for public broadcasting.

Other parties urge the Commission to recognize also that educational needs are broader—e.g., data transmission needs, library access service, and that facilities should be made equally available for health and other public service oriented purposes. The States of Alaska and Hawaii particularly support free or low-cost service for educational purposes. Reliance is also placed on the provisions in the Public Broadcasting Act of 1967 and Higher Education Act of 1968 to the effect that nothing in the Communications Act shall preclude common carriers from rendering free or reduced rate communications interconnection services to entities of this nature.

155. Some applicants have offered free service. Hughes is willing to afford PBS two satellite transponders (backed up) without charge, and free access to all Hughes earth stations. MCI Lockheed offers the equivalent of five TV channels for educational use (including PBS in Conus) and the services of its downtown earth stations, for 5 years without charge and thereafter at a fraction of commercial rates. Fairchild offers free use of two satellite transponders for public television in Conus, a free shared service to off-shore locations, and free part-time use of two transponders to the medical community. Fairchild also proposes an option of one or two 2-GHz transponders for free use to provide instructional television and message service to remote areas (e.g., Alaska bush) if other entities provide the earth stations. The Phoenix "prototype" contemplates free use by PBS affiliates of receive-only earth stations owned by local broadcasters. On behalf of CATV interests, NCTA opposes free service for educational television.

156. WTCI, the RCA applicants, and Western Union are willing to abide by a Commission decision to supply channels at reduced rates or without charge, provided that the cost is distributed among all satellite systems and users in some fair and equitable manner (or, in the case of Western Union, that the Commission establishes ground rules equally applicable to all contenders for major network business). A.T. & T. and GTE assert that the terms of service to CPB should be the same as for terrestrial interconnection, i.e., on an incremental cost basis. Comsat notes that service to public broadcasting (unless rendered on spare capacity on an as available basis) results in cost to someone. However, it joins Western Union in urging the establishment of ground rules, and hopes that "some form of preferential service can be worked out for public broadcasting in a fashion which meets the genuine requirements of CPB, and produces unit costs which are acceptable to the yet undecided commercial users of a domestic satellite system."

157. There can be no question but that commercial communications satellite operations in themselves, as well as any savings over terrestrial modes of communication, would not be possible without the very substantial public investment in research and development of technology that has been and continues to be made by the multibillion dollar U.S. space program. This investment is not limited to launch vehicle technology, but extends also to other areas important to communications via satellite, such as research and development paid for by NASA and other government agencies (see, e.g., paragraph 107) and technical information obtained in NASA's ATS program which is made available to all without charge. However, it cannot be denied that other forms of commercial enterprise have also benefited from the Government funding of research and development in other technological areas. This is particularly true of the results that have been produced by the funding of research and development to meet military requirements of all kinds.

158. Although private enterprise may benefit from these technological advances made possible by taxpayer investments for other purposes, such benefits do not necessarily take the form of higher profits for the entrepreneurs exploiting those advances. The benefits are primarily reflected in lower prices for goods and services available to the public because the research and development costs have been funded by sources other than the purveyor of such goods and services. This has been the case of the commercial applications that have thus far been made of satellite technology in the area of international communications services. For example, government funds are almost entirely responsible for the basic research included in the development of launch vehicles; the manufacturing costs and sales prices of such vehicles do not reflect those costs. This, in turn, means lesser investment commitments by commercial users of launch vehicles (e.g., Comsat and Intelsat) and fewer costs to be recovered by such users from the rates charged the public for satellite services. In this fashion, the investment of the taxpayer in research and development leading to commercial exploitation is returned in a significant measure to the public in the form of better service at lower charges. We expect that the uses of satellite technology in the domestic communications area will produce similar, if not more substantial, returns to the public for the governmental investments made in the development of space technology.

159. Thus, we do not believe that the public investment in space technology research and development constrains us to exercise our discretion so as to require, as a matter of policy, that all communications satellite system licensees, as a condition of their licenses, offer free or reduced rates to the various educational groups identified in various proposals.

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[91] In determining whether a space segment licensee will be permitted to use the same orbital location for another satellite (such as an existing ground spare) to replace a satellite that has failed short of its design life, the Commission will be guided by the circumstances then prevailing (including the length of time, if any, the failed satellite was operational, the current state of the technology, and the then existing demands on that portion of the orbital arc available for assignment).

[92] In the event that changes in orbital location assignments are found necessary, the Commission will endeavor to make such reassignments in a manner which will be least prejudiced to the affected licensees, all relevant factors considered.

[93] This minimum requirement is stated as (see paragraph 37): full-time use of two satellite transponders (fully backed up and nonpreemptible), plus access to a third transponder for 31 hours a week at specified hours and up to 7 more hours, subject to availability, for occasional use. They also desire access to all earth stations (transmit and receive) serving commercial broadcast and CATV customers. This requirement does not include terrestrial interconnection, any facilities required for educational use alone, or allow for future growth.

160. However, there is a well-established national policy which encourages and makes it lawful for communications common carriers to provide free or reduced rate interconnection services to noncommercial broadcasting networks and educational institutions. Thus, section 396(h) of the Communications Act provides:

> Nothing in the Communications Act of 1934, as amended, or in any other provision of law shall be construed to prevent U.S. communications common carriers from rendering free or reduced rate communications interconnection services for noncommercial educational or radio services, subject to such rules and regulations as the Federal Communications Commission may prescribe.

The Higher Education Act of 1968 also provided for similar rate benefits being extended to institutions of higher learning.

161. Although these statutes do not operate automatically to give preferential rate treatment to the educational interests involved, they clearly make it possible for the Commission to prescribe such rate treatment in accordance with the applicable procedures and processes of the Communications Act, as well as for individual common carriers to offer such preferential rate treatment at their own initiative.

162. On the basis of the limited information now before us and the obvious uncertainties as to the specific nature, capacity and costs of the satellite facilities that will eventually emerge, we are in no position at this time to initiate any definitive proposal looking toward preferential rate treatment or to even specify the types of entities within the educational and non-commercial broadcasting services that should be eligible for such rate treatment. The Commission will, however, entertain specific proposals by carriers or users for the prescription of preferential rate classification in accordance with sections 201, 202, 205, and 396(h) of the Communications Act. The carriers are of course free at any time to file tariffs providing for such preferential rate treatment subject to review by the Commission in accordance with the applicable statutory process and the rules adopted by the Commission pursuant thereto. Notwithstanding the foregoing, the non-carrier applicants (such as Hughes and Phoenix) who have offered free access to any facilities authorized to them to public broadcasting and other educational entities are, of course, expected to implement the proposals made in their applications.

F. PROCUREMENT

163. In paragraph 28 of the 1970 report, the Commission requested comments on its authority to adopt domestic satellite system procurement rules patterned after those promulgated under the 1962 Act for some facilities used in conjunction with the Intelsat system (Part 24, Subpart B), and on whether any modifications would be appropriate if similar rules were found desirable in the domestic field. As indicated in paragraphs 76–80 of the Appendix, most parties who commented on this question either disputed or doubted the Commission's authority to adopt procurement rules in the domestic satellite field, in light of the provisions of section 215(a) of the Communications Act and various statements of Commission representatives to Congress preceding the enactment of the 1962 Act. Some applicants (e.g., Western Union, Comsat, and the RCA applicants) indicated that they would voluntarily follow a policy of competitive bidding in any event. The Department of Justice took no position on whether the Commission could require competitive bidding in light of section 215, but stated that the Commission could deny a section 214 authorization where a carrier applicant fails to demonstrate that it is fulfilling its needs in the most efficient manner through a "least cost supplier." The Department further urged that competitive procurement is required by the 1962 Act in the case of Comsat.[94]

164. Apart from the Commission's authority, several parties question the desirability of issuing procurement rules in the domestic field under an open entry policy. Some, including the Department of Justice, doubt the effectiveness of any rules for equipment supplier applicants (e.g., Hughes, Fairchild, and Lockheed) who can be expected to use their own equipment even under competitive bidding. WTCI states that it wants to exercise its own business judgment in a competitive situation. Western Union and MCI Lockheed claim that there is no need to treat this type of procurement differently from other domestic communications procurement, and they see no warrant for imposing on the applicants the expense and administrative burden of complying with detailed rules. General Electric Co. (GE), a satellite equipment supplier which is not an applicant in this proceeding, states that procurement rules would be imperative for a monopoly or near monopoly situation, but are unnecessary (or should be only minimal) under an open entry policy.

165. For purposes of this proceeding we will assume the Commission's authority (under sections 4(i), 201(b), 214, 303, 307–309, and 313–314 of the Communications Act of 1934, viewed in the light of the congressional policy expressed in the Communications Satellite Act of 1962, particularly sections 102(c) and 201(c)(1) thereof) to condition any authorization for a domestic communications satellite system upon appropriate requirements, such as competitive bidding, to promote competition in the provision of equipment to such a system, as the public interest, convenience or necessity requires.[95] We are further of the opinion that it would be appropriate to exercise such authority and to require competitive procurement in the interest of the public if we were to authorize only

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[94] We think that section 201(c)(1) applies to "the communications satellite system and satellite terminal stations" authorized under the 1962 Act for Intelsat purposes, but does not necessarily apply to Comsat for independent facilities authorized under the 1934 Act and section 102(d) of the 1962 Act.

[95] The legislative history of section 215 of the 1934 Act reflects the concern of Congress about procurement transactions between a telephone carrier and its manufacturing affiliate (e.g., the Bell System and Western Electric Co.). As first introduced section 215 (b) and (c) would have authorized the Commission to approve all such transactions and to require competitive bidding (S. 2910 and H.R. 8301, 73d Cong., second session. (1934)). Instead, Congress decided to direct the Commission to study the matter and report its recommendations as to whether legislation on this subject would be desirable. Hearings on S. 2910 before the Senate Interstate Commerce Committee, 73d Cong., second session, pp. 77, 81, 83 (1934); hearings on H.R. 8301 before the House Interstate Commerce Committee, 73d Cong., second session (1934); 78 Cong. Rec. 8824 (remarks of Senator Dill); H.R. Rep. No. 1850, 73d Cong., second session, p. 3 (1934). Although the Commission subsequently reported to Congress, no legislation was enacted requiring competitive bidding for carrier-affiliate procurement transactions. H.R. Doc. No. 340, 76th Cong., first session (1939).

In enacting the 1962 Act Congress made clear its intent to protect the public interest by requiring competitive procurement in the communications satellite field for facilities of the global system, both in the case of the U.S. chosen instrument for participation in space segment ownership (Comsat) and also for procurement by terrestrial carriers for earth stations operating with such system (section 201(c)(1)). Some views were expressed that the Commission already possessed such authority under the 1934 Act. See e.g., 108 Cong. Rec. 9980; 108 Cong. Rec. 10251; 108 Cong. Rec. 10252; Hearings on S. 2814 and S. 2814 amendment before the Senate Committee on Commerce 87th Cong., second session, pp. 267–268 (1962). In view of the explicit Congressional intent that competitive procurement should apply in the case of a single global communications satellite system, the Commission could properly take account of that policy if we were similarly to establish a single system in the domestic field. As the Supreme Court put it in Southern Steamship Company, v. NLRB, 316 U.S. 31, 47:

> Frequently the entire scope of Congressional purpose calls for careful accommodation of one statutory scheme to another, and it is not too much to demand of an administrative body that it undertake this accommodation without excessive emphasis on its immediate task.

Further, it would be particularly inappropriate to effectuate the policies of the 1934 Act "so single-mindedly" as to "wholly ignore other and equally important Congressional objectives" (*id.*) in the 1962 Act in light of the statement in section 401 of the 1962 Act that: "Whenever the application of the provisions of this Act shall be inconsistent with the application of the provisions of the Communications Act, the provisions of this Act shall govern." The Commission is not precluded from exercising such power because it has in the past expressed doubts as to its authority under the 1934 Act alone and/or sought clarifying legislation. United States v. Southwestern Cable Co., 392 U.S. 157, 164–165, 170–171 (1968); American Trucking Association v. Atchison, Topeka and S. F. Ry. Co., 387 U.S. 397, 415–418 (1967).

a single space segment—either to one applicant or to a consortium of the pending applicants. However, we do not believe that such a requirement is presently necessary or desirable as a prerequisite to the initial implementation of an open entry policy which would afford an opportunity for the development of competitive domestic systems.

166. We think so primarily for these reasons. First, the authorization of several systems to serve a competitive market affords a natural incentive to each licensee to select the equipment most satisfactory for its purpose in terms of cost and performance. There is much to be said for WTCI's desire to exercise its own business judgment in a competitive situation. Second, an open entry policy with potential for future new entry would afford equipment suppliers an opportunity to vie for the business of different customers, rather than restricting them to competition for the business of a single entity or system. To be sure, those applicants that are themselves equipment suppliers can be expected generally to use their own equipment. However, as the Department of Justice and Comsat point out, it is unlikely that competitive bidding would remedy that situation. Further, the circumstance that there are equipment supplier applicants in addition to Hughes (as well as applicants dealing, or apparently willing to deal, with other suppliers) may permit an operational demonstration of different equipment that might enhance the opportunity for future supplier competition. Indeed, as previously noted, entry by equipment licensees may be the only realistic way to encourage the development of rival technologies at this stage in light of the Hughes preeminence in the commercial spin-stabilized communications satellite field.

167. Some space segment and earth station applicants may decide that their interests would be best served by a voluntary practice of seeking competitive bids. We exhort applicants to give serious consideration to that possibility. However, in the present circumstances it does not appear that any benefits that might be derived from a Commission-imposed requirement would outweight the burden of formulating and administering procurement regulations or the expense, burden, and delay to the applicants in complying with formal and detailed rules. We are of the view that the public interest would be better served for now if we devote our limited manpower and other resources to more pressing matters of higher priority in the authorization of initial domestic satellite facilities, toward the end of an early realization of domestic satellite service to the public. If competitive systems do not materialize or if procurement regulation otherwise should in the future appear imperative in the public interest, we will exercise whatever authority we possess in this area to protect the public.

PROPOSED ORDER

168. Authority for the policies and conditions adopted herein is contained in sections 1, 2, 3, 4 (i) and (j), 201, 202, 203, 212, 213, 214, 218, 219, 220, 301, 303, 307–309, 310(b), 319, 396, 403, and 605 of the Communications Act of 1934 and sections 102 and 201(c)(8) of the Communications Satellite Act of 1962.

169. *Accordingly, it is ordered*, That:

a. The policies and conditions set forth herein are adopted, effective _____, 1972.

b. Western Union, Hughes, GTE, WTCI, the RCA applicants, Comsat and A.T. & T. shall apprise the Commission on or before _____, as to whether they desire to take advantage of the opportunity for initial entry under the policies and conditions specified in this second report and order and, if so, how much time would be desired for the submission of space segment proposals consistent with such policies and conditions for the Commission's approval. Pending Commission action on such proposals, it is not necessary to submit amended or new applications for earth station facilities, unless the applicants so desire.

c. MCI Lockheed and Fairchild shall apprise the Commission, within 30 days after the statements filed by other system applicants pursuant to subparagraph (b) above, as to whether they intend to pursue their pending system applications in light of the statements of such applicants and the policies and conditions specified in this second report and order; and, if so, how much time is desired for the submission of proposals consistent with such policies and conditions, for the Commission's approval. Pending Commission action on such proposals, it is not necessary to submit amended or new applications for earth station facilities, unless the applicants so desire.

d. The Commission retains full jurisdiction over all aspects of this proceeding.

APPENDIX

Summary of the Comments of the Parties in Docket No. 16495

1. In their comments, the system applicants have posed as the key issue for threshold resolution by the Commission the question of the number and nature of the systems to be authorized. While each urges that its own proposal should be authorized and some advocate a policy of limited or complete open entry (within the confines of orbital arc and frequency availability), there are claims that each of the pending applicants should be disqualified on various policy grounds. Moreover, in commenting on these questions, the applicants and other parties have relied on some arguments reflecting their positions on other issues involved in this proceeding; e.g., technical and economic conflicts among system proposals, the appropriate initial role of A.T. & T., ownership of and access to earth stations, service to Alaska and Hawaii, the terms of service to noncommercial broadcasters and other educational users, procurement policies, etc. We shall therefore summarize first the positions of the parties on the threshold issue, and then supplement as necessary with their views on other issues.

I. THE NUMBER AND NATURE OF THE SYSTEMS TO BE AUTHORIZED; ALLEGATIONS OF DISQUALIFICATION

A. Positions of the system applicants

2. One applicant, Comsat, urges that there is need for only a single multipurpose system, and separate facilities for A.T. & T.—given the size of its requirements and desired use of dedicated facilities. Comsat claims that all of the applications cannot be granted for technical and economic reasons, e.g., an alleged scarcity of orbital locations and basic reliance on the same markets for economic support. Although conceding that applicants such as Hughes/GTE or Western Union might generate enough traffic for smaller systems, Comsat argues that such systems would be less cost-effective than a fully loaded larger multipurpose system and would be less efficient in orbital arc utilization. It does not undertake to assess the potential advantages or disadvantages of the even larger capacity systems proposed by MCI Lockheed and Fairchild, in view of what Comsat calls "technological risks" and "conjectural cost estimates."[1] However, Comsat asserts that meaningful competition among large multipurpose systems is not a realistic possibility, and that the market should not be fragmented at the expense of economies of scale.

3. Comsat further takes the position that it alone, among the pending applicants, lacks conflicting interests and is otherwise fully qualified to be selected as the chosen instrument for the space segment.[2] Comsat urges that all of the other applicants should be disqualified because each is affiliated with manufacturing, user, or terrestrial carrier interests, or some combination thereof, and would—if given exclusive or primary responsibility for meeting domestic communications satellite needs—enjoy a position that could have anticompetitive consequences in at least one major market.

4. With respect to satellite equipment suppliers (Hughes, RCA, Fairchild, and Lockheed), Comsat claims that as the owner of a system a supplier would have substantial economic power in the satellite service field and the ability to use the leverage of this power. Such a licensee, Comsat alleges, would have obvious incentives to use its own equipment, and might engage in price squeezes (i.e., maintain higher prices for equipment sold to others) or provide less efficient service to others, or reserve for itself the benefits of research and development. Comsat argues that any procurement policies that might be adopted by the Commission would not avoid such potential consequences, because meaningful competitive bidding is an impossibility when one of the bidders is the purchaser (unless the purchaser is barred from bidding—in itself an anticompetitive solution). It further asserts that no manufacturer applicant has demonstrated that vertical integration would result in any significant economies, and that vertical integration is contrary to the policies underlying the "Vertical Merger Guidelines" of the Department of Justice. Comsat also urges that authorization of a supplier applicant would deter potential new suppliers in a field which is now fairly limited.[3]

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[1] Comsat and other parties have made some comments on the merits of specific technical or other features in the applicants' proposals. We do not attempt to describe such comments in this summary in view of the considerations set forth in the policy discussion in the second report and order (paragraphs 50–61).

[2] Comsat argues that earth station ownership should be limited to it and other common carriers.

[3] According to Comsat, less than ten manufacturers have produced unmanned satellites and only three of these have produced synchronous non-experimental satellites (Hughes, TRW and Philco-Ford). Comsat's most recent request for procurement elicited only four responses (Hughes, RCA, TRW, and Lockheed).

5. With respect to user applicants (e.g., Hughes for CATV programing and RCA Globcom/RCA Alascom for television network program distribution service), Comsat points to other possible adverse consequences. It argues that such an authorization would enable RCA to enhance the competitive position of NBC vis-a-vis other networks. In addition to asserting that Hughes would obtain an enhanced position vis-a-vis other CATV program distributors, Comsat notes various Hughes interests in related CATV and program production fields.[4]

6. With respect to terrestrial carrier applicants (MCI, RCA, WTCI, GTE, and Western Union), Comsat notes that each (except for GTE) proposes to serve itself as well as others. To the extent that others are competitors, Comsat asserts that this would raise problems similar to those it has indicated for user applicants. For example, a satellite system authorization might enhance the position of MCI or WTCI vis-a-vis other specialized terrestrial carriers. RCA Globcom would have "bestowed upon it the advantage of being the only one of three United States international record carrier competitors that has a domestic arm." Western Union, according to Comsat, should not be authorized to undertake a major new responsibility until it has demonstrated that it can properly discharge its present responsibilities in the provision of terrestrial public message service. From the standpoint of competition between satellite and terrestrial systems, Comsat further suggests that a terrestrial carrier might be reluctant to participate aggressively and innovatively in the development of satellite technology and service (citing paragraph 26 of the 1970 report herein, 22 FCC 2d at 96).

7. None of the other applicants or parties to this proceeding (with a few exceptions among the latter) [5] has supported the authorization of a space segment monopoly. A.T. & T., which claims that the public interest requires that it be authorized to use satellites as an integral part of its nationwide communications network (see paragraphs 56–63), asserts that its participation will aid innovation, and will not inhibit innovation by others—as shown by the various proposals submitted in this proceeding. It urges the Commission to authorize Comsat/A.T. & T. and such other applicants as can reasonably be found in the public interest.

8. Fairchild, while recommending a limited open grant policy, cautions the Commission to avoid a wasteful multiplicity of systems that might stifle potential and result in higher costs. It suggests that its proposed high capacity satellites, reusing available spectrum several times from each orbital location, would afford an optimum initial system from the standpoint of orbital and spectrum utilization. It also claims that its system could offer major economies in costs per transponder,[6] and that this—together with the satellite capacity—would permit its offering of free public interest services without burden on other users. Fairchild, whose proposal looks toward accommodation of A.T. & T. growth traffic, urges the Commission to disregard existing contracts or understandings between applicants, and to require A.T. & T. and other carriers to use satellites where economy and efficiency demonstrate this would best serve the public interest.

9. In urging the adoption of a policy which assures access to all whose entry (or threatened entry) would encourage technical innovation, efficient production and lower costs to consumers, Fairchild summarizes its position against the grant of an exclusive authorization to Comsat as follows:

"In view of the interlocking relationship between Comsat and A.T. & T. and in light of the prior procurement history of Comsat and its close association with Hughes, there is little doubt that a license grant based on the current Comsat application would result in an unhealthy perpetuation of this existing triumvirate which would discourage present applicants from future attempts to enter the market * * * Absent effective competition, [this] combination would tend towards a dangerous monopoly encompassing international and domestic satellite markets."

It also cautions against an open entry policy based on the present proposals of the pending applicants, stating:

"Considering the concentrated nature of the user market—largely dominated by A.T. & T. and the TV networks—and the existence of prior agreements tying major users into specific systems—the Comsat/A.T. & T. and Hughes/GTE combinations—the open grant policy in this instance would lead to a severely restricted marketplace and would not guarantee the lowest cost to the ultimate user."

10. Fairchild's suggested solution is the following:

"In developing policies and guidelines for the granting of domestic communications satellite licenses the Federal Communications Commission can best serve the public interest by conducting a meaningful competition among all applicants. This competition should be based on objective criteria promulgated by the FCC—realistic traffic models, minimum performance standards and guaranteed maximum per channel rates—criteria recognizing the facts of limited orbital space and usable spectrum, as well as the need for reliable service. Satellite licenses should be granted to those applicants who can meet the criteria set by the FCC and whose satellite systems will result in lower costs to the user than existing terrestrial networks."

11. Hughes takes the position that the Commission should authorize a minimum of three domestic systems rather than a monopoly which it states would result in an inferior U.S. system. Hughes argues that the authorization of several systems would bring in the advantages of competition and provide a strong impetus for economy in development and innovation in planning. Noting that the pending proposals reflect different service objectives and technology, it asserts that these can be better accommodated by authorizing several systems. According to Hughes, this newly emerging communications environment is in a period of experimentation calling for boldness. If only one system is authorized, the design characteristics and technology of that system would become a limitation on the system's performance. Hughes indicates that a severe compromise in design would be necessary to incorporate all in one spacecraft design, whereas several systems with specialized configurations would not need to make such a compromise. Concerning claims by some parties that the technology proposed by some applicants may be too risky to warrant an authorization at this stage, Hughes urges the Commission to make a grant to such applicants if it finds (with the technical assistance of NASA) that the technology is sufficiently mature to warrant commercial application. While requesting the Commission not to delay authorizations to others, Hughes states that the "problems inherent in establishing new technology should not be a ground for initial disapproval."

12. Hughes further states that claims as to orbital space limitations have been exaggerated and that this is not a realistic constraint. By reducing orbital location separations to 3° (as proposed for its own application), utilizing alternate polarized transmission between systems, and by frequency plan changes, Hughes claims that all of the proposed systems except Comsat and Fairchild could be accommodated within orbital locations capable of illuminating all 50 States (i.e., without using other orbital locations that could illuminate Conus). If service to Alaska and Hawaii was not required for all systems, this would further facilitate the accommodation of multiple systems.

13. Hughes also challenges the economies of scale argument. Its own analysis indicates that hardware costs per transponder are virtually the same for all the applications (exclusive of Fairchild, which Hughes says it finds difficult to compare), regardless of the size or number of spacecraft. In other words, Hughes is of the belief that for any given number of transponders, the total space hardware costs would be comparable. Hughes concedes that there would be a modest cost saving per prime channel if one spare in-orbit satellite backs up two rather than one primary satellite. However, it asserts that one for two is not as high quality back up as one for one, and further points out that if used for interruptible services, a spare would be earning revenue for the system (whether backing up one or two satellites). With respect to the alleged economies in sharing earth stations, Hughes states that a single, multipurpose earth station may be more economical—though the economies would vary from situation to situation and might be offset by other factors. Hughes notes that there may be added administrative, accounting, legal and operational problems in shared ownership, and that interconnection costs to users may reduce many of the economies, especially in the case of CATV.

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[4] Comsat lists as examples: The Hughes Sports Network, TelePrompTer Corp., and Theata Cable of California, Theata-Com Corp. (CATV communications equipment), and the role of Howard R. Hughes and "Hughes Production" (an operating division of Hughes Tool Co.) in the motion picture field (licensing motion pictures and stars, and the ownership of scripts, stories, films, and formerly produced motion pictures).

[5] United Telephone System urges the Commission to authorize just one space segment to be owned by a new carrier or one now in existence, with the earth stations and terrestrial links owned by those who use the space segment. Western Union International states that it would be desirable to have a single, multipurpose system with the space segment and earth stations owned by all authorized carriers. In the event that the Commission should decide upon this approach, WUI is interested in ownership participation to link its gateway operations with hinterland subscribers in the United States and to meet its growing requirements for the transmission of communications to various gateway centers. TVC of California, Inc., and Consumers TVC, Inc. suggests exploration of a consortium combining the technical know-how of all applicants, including A.T. & T. The United States Independent Telephone Association (USITA) urges that in order to be considered for a grant, each applicant must demonstrate economic viability. USITA sees no reason for introducing new carriers, and believes it inefficient to divide responsibility between carriers and noncarriers. ITT World Communications, Inc. favors multipurpose systems offering a full range of communications services, provided that authorizations are conditioned upon the grant of indefeasible rights of use to authorized carriers in satellites and earth stations.

[6] Fairchild asserts that its system would be competitive with representative 12 and 24 transponder satellite systems with a 40 channel fill, would exhibit significant cost savings with a 72 channel fill, and would require the use of fewer earth station antennas.

14. On the question of smaller versus larger capacity satellites, Hughes argues that the public would benefit from minimizing launch and operational failure risks and from closely relating an increase in capacity to an increase in user demand. It claims that these benefits could be more easily achieved by using several smaller rather than fewer larger satellites. Hughes also asserts that in a large satellite, capacity would far exceed initial demand and that most transponders would simply lie fallow until demand develops. In this connection Hughes states: "If one assumes a 10 to 20 percent growth each year, typical of many communications services, there is no way to key this rate of growth with either the number or timing of the large satellite launches. There will normally be too little or too much traffic demand. This situation need not occur if several systems are authorized."

15. While noting that presumably A.T. & T. could supply enough traffic to support a system, Hughes alleges that there is not otherwise sufficient demonstrated traffic to support all the facilities proposed by the remaining seven applicants. It claims that there is clearly enough traffic to support at least two systems, exclusive of A.T. & T. As one of the criteria for an authorization, Hughes originally urged the Commission to require each applicant to demonstrate a substantial likelihood that sufficient traffic exists to support that system. Upon further reflection in its reply comments, Hughes came to the belief that a need to pinpoint specific customers in advance would be unnecessarily restrictive, since the industry has not yet developed and the market for its services is still unproven in scope and quantity. It states: "To require applicants for satellite systems to prove in advance the services they will offer and the precise customers they will serve might in and of itself artificially stunt the development of that market." It now favors a policy of free competition and control by the marketplace. Hughes says that it shares the belief of several other applicants that comparative hearings on a variety of decision factors can and should be avoided. In its view, this would result only in a substantial delay in the realization of the benefits of satellite service, and could serve no useful countervailing public interest purpose.[7]

16. With respect to the initial role of A.T. & T., Hughes states that A.T. & T. could, by domination of the satellite market, smother opportunities for development of new and different services by others. This could occur, Hughes says, whether A.T. & T. owned space facilities or leased the entire channel capacity of a space segment owned by an affiliated entity. However, Hughes supports a grant of the Comsat/A.T. & T. proposal as in the public interest, provided that the Commission: (1) Bars use of the facilities for at least 2 years for services other than switched public message; (2) does not authorize use of the facilities for specialized services until after a hearing on the question of cross-subsidy; and (3) permanently precludes A.T. & T. from leasing entire satellite transponders to others.

17. GTE argues against a monopoly authorization to a single entity or to a consortium composed of all the applicants. It urges that several of the pending applications appear to be viable and should be granted, but warns against the authorization of excessive channel capacity that might result in nonviable systems. According to GTE, the applicants have proposed a total of 600 in-orbit transponders, of which 336 would be primary and the rest spare. GTE classifies the applicants' proposed traffic into two categories—(1) firmly committed or controlled, and (2) speculative. It claims that A.T. & T., GTE/Hughes, and possibly Western Union and RCA have demonstrable traffic loads (sufficient to fill 67 primary transponders),[8] and that the remaining proposed traffic is speculative. While several applicants have made proposals relying in part on the availability of television network transmission, GTE notes that the networks themselves have made no commitment to use satellites or to any particular applicant. It further notes that one or two applicants appear to be relying on a monopoly or near monopoly status, so that traffic for which they have no commitments will somehow be made available to them.

18. GTE takes the position that the Commission should first address the question of how many and what kind of systems to authorize and then evaluate the applicants on the basis of such criteria as financial ability, technical soundness of the proposal, willingness to serve others on a nondiscriminatory basis, and economic viability—granting such as meet the criteria. It states that when there is a valid claim of economic exclusivity between applicants, comparative hearings should be held. GTE urges that it is not necessary for the Commission to handicap artificially the use of space technology at this time by in any way limiting the role of A.T. & T. or any other carrier. It asserts that carriers should be permitted to provide authorized services to the public by any practical means, subject only to the necessity of showing public need for the service and economic justification. In essense, as GTE puts it: "Some combined method of meeting the public's felt need for a satellite system and the expectations of interested applicants must be arrived at, without excessive authorization of channel capacity."

19. Western Union also takes the position that a monopoly is unnecessary and that no applicant should be given a grant with a promise, either express or implied, that other systems will not be authorized now and in the future. The more difficult question, Western Union says, is whether the market is sufficient to accommodate all of the pending applications. Admittedly, the communications market is growing fast and will continue to grow. Noting, however, that undue fragmentation can adversely affect the public interest, Western Union doubts that unlimited entry would be a sound policy. Western Union recommends that the Commission adopt a policy (for pending and future applications) of giving favorable consideration to all applicants who can demonstrate a need for communications satellite facilities for their existing and continuing business purposes. For example, Western Union states, the Commission could authorize existing common carriers to expand to the satellite field, make a grant to a business enterprise showing a need and intention to use satellite facilities for its private business purposes, and could permit grants to groups that join together in a cooperative sharing arrangement for construction and operating costs to meet the private communications needs of the participants. It further states that the Commission should, of course, require that all such applicants be technically and financially qualified, and not subject to any legal infirmity that might bar their operation of satellite facilities.

20. Western Union would make an exception for A.T. & T.[9] In its view, A.T. & T. apparently takes a position that its proposed domestic satellite facilities are not important to its ability to serve its customers and would provide no significant economic benefits to them. In this connection, Western Union notes that the A.T. & T. application (p. 25) concedes that the proposed service could be provided by terrestrial means at less cost. Western Union urges that the public interest would be best served, at least for an initial period, by limiting A.T. & T.'s role to leasing channels for message toll telephone in systems established, owned and operated by others. It alleges that as the dominant domestic carrier A.T. & T., with its vast investment in terrestrial facilities, might be constrained—consciously or subconsciously—in satellite innovation and planning. Moreover, A.T. & T. might pose a substantial constraining factor to other applicants, including Western Union, as to the kinds of systems and types of services and markets that may be developed. According to Western Union, if A.T. & T. is permitted to provide video service via satellite, it would be difficult or impossible for Western Union or any other authorized applicant to compete for such business. Private line service is now dominated by A.T. & T., and this domination would be further enhanced if A.T. & T. provides private line service via satellite. If the Commission should nevertheless authorize satellite system facilities to A.T. & T., Western Union requests that they be limited to public message service only.

21. With respect to the qualifications of Comsat, Hughes, and the RCA applicants, Western Union comments: Comsat should be excluded from competing in the domestic sphere because of the congressional intent, as expressed in section 103(7) and 305(2) of the Communications Satellite Act of 1962, to limit Comsat's participation in international communications satellites to the role of a carrier's carrier. There is no reason to suppose a different intent in the domestic sphere. See also, Comsat, 1 FCC 2d 82, 85; Comsat, 2 FCC 2d 41, 45. Moreover, there would be a conflict-of-interest situation if Comsat is authorized to compete with other carriers whose representatives sit on the Comsat Board of Directors.

22. The broad role proposed by Hughes—manufacturer of hardware, owner and operator of a CATV program distribution system, program creator and editor, and lessor of channels to GTE—places a tremendous responsibility and advantage in the hands of a single entity, and this is not in the public interest. Moreover, Hughes proposes that its rates for programing and delivery would not be subject to Government regulation. Any successful applicant who leases satellite channels or provides satellite service to the public should be subject to common carrier regulation.

23. RCA Globcom/RCA Alascom present a combination of an intrastate carrier with a major international record carrier, and there is a serious question whether RCA Globcom is legally qualified in view of section 222 of

[7] In commenting on the differences in the parties statements as to comparative costs, Hughes reaffirms its belief that there is not much difference and states further that the differences are not significant when compared to the inherent uncertainties in the basic cost data and life expectancy. Hughes asserts that the differences among them would not support arguments for preference of one applicant over another on a cost effectiveness basis, and that actual differences will emerge only when the systems are operational and life expectancy is proven in orbit.

[8] GTE divides these 67 transponders as follows (Further Comments of May 22, 1971, p. 9): eight for GTE, eight for Western Union, 22 for A.T. & T. switched message, 24 for A.T. & T. Picturephone and/or high speed data, and five for RCA traffic of an unidentified nature.

[9] Western Union also urges that A.T. & T. should not be permitted to own major earth stations.

the Communications Act of 1934 and its legislative history. Moreover, in addition to being an equipment supplier RCA has widespread communications interests already, including: a large international carrier, an Alaskan intrastate carrier, nationwide radio and television networks, and the ownership and operation of five VHF stations and seven AM stations, all in major markets. Departing now from Western Union's comments, we continue with the positions of other parties.

24. RCA Globcom/RCA Alascom urge that there is room for only one carrier in Alaska, which presents a special situation (see paragraphs 100–101), and state their intention to claim section 309 hearing rights if any entity other than RCA Alascom is authorized to serve Alaska. With that exception, they are opposed to a monopoly grant. Their position is that the Commission should grant all applications[10] which meet absolute, rather than comparative, criteria—i.e., those that establish technical, financial and legal qualifications and the general sufficiency of the proposal, including economic viability. The RCA applicants note that while most applicants generally agree that there is not enough traffic for all eight systems as proposed, they do not (except for GTE in part) urge that comparative evidentiary hearings are required and all (except Comsat) agree that more than one system could be authorized. Moreover, all of the applicants, except for Comsat, believe that technical conflicts can be settled among the applicants, once the question of economic conflicts is resolved.

25. RCA Globcom/RCA Alascom state that if applicants were required to show a public requirement for the proposed services and a reasonable probability that an economically and technically viable system would be established, this "would not preclude joint arrangements among applicants." They suggest that once minimum criteria are established, the remaining applicants should be encouraged to negotiate to eliminate conflicts (e.g., through the joining together of a number of individual applicants), subject to monitoring by the Commission to insure that the public interest is cared for and to resolve disputes where voluntary efforts fail. If all authorized systems are faced with a substantial degree of competition from other systems, including the risk of loss and failure, then the RCA applicants believe it inappropriate to grant future indefeasible rights of use to other carriers desiring to use the space segment. Such an arrangement would place all of the risks on the pioneering carrier, and would afford others an opportunity to acquire indefeasible rights of use after the system proved successful and to refrain from doing so if the contrary appeared. The RCA applicants state: "If a carrier desires an ownership interest in the space segment of earth stations, and if it is willing to acquire that interest from the outset so that it shares fully in the risks as well as the possible benefits, we would be willing to negotiate that participation now."

26. WTCI, which believes that the public interest would be best served by the establishment of multipurpose systems, is against a monopoly grant. It claims that one multipurpose system would not meet varied needs and would discourage diversity and experimentation. Like Hughes, WTCI sees no economies of scale, since costs per transponder appear about the same, and no real shortage of orbital locations. It also asserts that any cost advantages in unnecessary combining of earth stations would be offset by additional terrestrial interconnection facilities and other complexities. WTCI urges that only by the creation of a competitive atmosphere will this new technology be able to realize its maximum potential in innovation, learning curve, flexibility in service offerings and general benefits to the public. It would place restrictions on the number of systems only on the basis of technical constraints. WTCI states that it plans to construct, if authorized, regardless of the number of pending applications authorized by the Commission. It says that the proposed satellite facilities would complement its terrestrial network, enable it to provide a variety of services, and have elicited interest from various miscellaneous common carriers. WTCI has no objection to equal consideration of A.T. & T., provided that there are regulations which would prohibit cross-subsidization with monopoly services (though WTCI does express some concern about the mechanics of enforcement of such regulations).

27. MCI Lockheed says the Commission should exercise its best efforts to promote accommodation, avoid prolonged hearings and produce an early system or systems. It urges that the public would be best served by the creation of an environment which would result in the lowest transmission cost per unit of time for reliable communications of acceptable quality. Taking the position that the public benefits most from competition, provided all have equal opportunity, MCI Lockheed states: "Judgments made by prudent businessmen are the best means of determining whether, given a number of potential competitors, there is sufficient economic support for all to have a reasonable opportunity to operate profitably." It points out that if there were open entry for all found qualified, the Commission would have no need to make prior judgments on the size of the potential market, and hence need not hold hearings on economic issues. MCI Lockheed considers this to be the preferable approach, if there is no cross-subsidy by A.T. & T. and if applicants not affiliated with or controlled by A.T. & T. have an opportunity to compete.[11]

28. Judged in the light of the Commission's expectation that domestic satellites would open new markets and stimulate innovation, the A.T. & T. application does not qualify for a grant, according to MCI Lockheed. It argues that A.T. & T. has proposed no new services or reduction in rates for existing services, and indeed concedes that equivalent services could be provided at slightly lower cost by means of terrestrial facilities.[12] Considering, in addition, A.T. & T.'s involvement with Comsat, MCI Lockheed urges that A.T. & T. should not be authorized at this stage, or be a grantee with Comsat. However, MCI Lockheed states that A.T. & T. should be able, at an appropriate time when shown to be advantageous to it, to use satellite systems owned by unaffiliated carriers.

29. MCI Lockheed urges even more strongly that Comsat should be excluded because of its relationship with A.T. & T. and conflicts of interest created by its role in the Intelsat system. It alleges that Comsat and A.T. & T. could fix the price for A.T. & T.'s lease without regard to cost, since all cost would be passed on to A.T. & T's customers with little effect on volume of service in view of A.T. & T.'s monopoly position in message toll and wide area telephone service and its very large share of the private line market. Moreover, MCI Lockheed contends that Comsat's agreement with A.T. & T. gives them an assured first entry in light of A.T. & T.'s complete control over traffic. It also asserts that the reasoning underlying section 222 of the Act—fear that a domestic carrier might favor its affiliated international carrier over other international carriers—should give further pause to a Comsat authorization. For example, MCI Lockheed asserts, A.T. & T. has international facilities and Comsat might be motivated to favor it against others as an international forwarder for its domestic traffic. MCI Lockheed further urges that A.T. & T. and Comsat should bear the burden of showing that a Comsat space monopoly would not inhibit competition between Comsat and A.T. & T. If A.T. & T. is content to be the sole customer of the Comsat I system and does not mind the prospect of activation of the Comsat II system, then MCI Lockheed presumes that A.T. & T. does not consider Comsat II to be a competitive threat.

30. According to MCI Lockheed, some of the same reasons for not extending A.T. & T.'s terrestrial monopoly into space argue against extending Comsat's international space monopoly (as the United States chosen instrument) into the domestic scene. MCI Lockheed alleges that Comsat's role in Intelsat could inhibit service and technical innovation and cost reductions for any domestic system owned or operated by Comsat. As an example, MCI Lockheed states that Comsat's proposed satellites are a variant of the Intelsat IV design, and it is thus obligated to reimburse Intelsat partially for original research and development on a retroactive, pro rata basis, which in turn would redound to Comsat's benefit. It also claims potential conflicts of interest in the event that Comsat should provide domestic service to Hawaii, Alaska and Puerto Rico both via Intelsat facilities and also by means of its own domestic facilities. Other conflicts of interest could arise because of Comsat's role on the Intelsat Board of Governors, and as management services contractor, in making recommendations on the compatibility of the Intelsat space segment with those of other systems and as to whether

[10] While not urging the disqualification of any applicant on policy grounds, the RCA applicants assert that all authorized systems should be required to operate under common carrier regulation. Otherwise, they state, the system operator could negotiate with customers and discriminate, even among those who compete with each other.

[11] MCI Lockheed notes that all of the applicants are proposing to embark on a venture with greater risks than terrestrial facilities, and urges that once an applicant has demonstrated that its proposed system is designed by companies with demonstrated competence in their field, the Commission should allow the marketplace to test reliability. It has included in its application a market study by Booz, Allen & Hamilton, which purports to show a very large potential market between 1975 and 1985. MCI Lockheed is of the view that the potential market is sufficient to support a number of larger capacity satellites. It claims that less than 20 transponders in its proposed system, carrying leased traffic, would provide adequate revenues to meet system operating costs and depreciation charges, and provide an attractive return on investment. Because its proposed system can allegedly earn an attractive rate of return at a relatively low level of utilization, MCI Lockheed urges that the consequences of unused capacity are minimal. It further notes that idle transponders could be used to extend system lifetime by providing redundant units and reducing electrical power requirements.

[12] MCI Lockheed charges that A.T. & T.'s entry into the satellite equipment manufacturing market for 18 and 30 GHz could have serious anticompetitive effects. It asserts that if A.T. & T. spends $200 million in research and development (as suggested in its supplemental comments, pp. 8–10, 16–17, and 19), its patent position—together with being the largest customer—would give it virtual monopoly control.

a domestic system would avoid significant economic harm to the international system. If the Commission adopts a policy of open entry, MCI Lockheed asserts that Comsat would thus be in a position to pass upon its competitors. If only Comsat and A.T. & T. are authorized, there would still be allegedly irreconcilable conflicts between Comsat's duties as manager for Intelsat, its obligations as the United States chosen instrument, and its role as the sole stockholder of a domestic system or systems.

31. MCI Lockheed concludes that the Commission cannot change Comsat's international role, but it can refuse to authorize any domestic system for Comsat and should not be inhibited from doing so since there are six alternative systems and owners.

B. Positions of other parties

32. The Department of Justice is of the belief that the development of domestic satellites should be controlled fundamentally by competition in a free market. It asserts that this would produce superior economic results, encourage service and product innovation, create cost control and lead to lower rates. According to the Department, the diversity in the pending applications (in terms of proposed services, technology and costs) attests to this. While it thinks there would initially be only a few systems—a number reflecting the market's evaluation of existing commercial alternatives, the Commission should leave the door open to new entry which would also put the initial systems under continued pressure to innovate and reduce costs.

33. The Department is opposed to holding comparative hearings on economic exclusivity. Although many proposals rely to some degree on the networks, it sees no public interest in binding the networks through regulation to any particular applicant chosen in advance by the Commission. Rather they should be permitted to determine through free negotiation what system would best meet their needs. The Department notes that comparative hearings are time consuming, would delay a resolution of this matter as well as the provision of satellite service to the public, and might—because of the expense and uncertainty—significantly increase the cost of any ultimate facilities. Moreover, such a procedure would be particularly unfortunate in an area, like this, of rapidly developing technology which would make obsolete the plans on which the hearing was based. Instead, the Department urges the Commission to make clear that systems must succeed or fail on their commercial merits, without public subsidy either through rate regulation or restrictions on competition.

34. The Department does not oppose the authorization of a system dedicated to the exclusive use of a carrier or noncarrier entity. However, it suggests that each system, whether common carrier or not, should be required to provide nondiscriminatory access to comparable classes of customers (within the limits of facility capacity). In this connection the Department urges that if dedicated facilities are authorized to participants (like networks), the Commission should make approval conditional upon other interested parties being given an opportunity to join and participate, or to lease channel space on an equitable basis. There should be a requirement that any joint venture have sufficient satellite capacity to meet all firm commitments. However, once the satellite is in operation and all capacity is committed, existing users should not be required to reduce their use to make room for latecomers. With each increment in capacity, outsiders should again have the right on equitable terms to become members of the joint venture or to lease channels in the incremental units.

35. With respect to the various claims of applicant disqualification, the Department states that "we completely fail to understand" the reasoning underlying Comsat's argument that it should be granted a monopoly because of alleged economies of scale and competitive dangers posed by the entry of applicants that are equipment suppliers or users. The Department points to studies of the applicants, which allegedly indicate that with proven technology there are not such clear cut economies of scale between any of the systems to warrant a monopoly franchise to any applicant. While recognizing that there may be competitive dangers in authorizing suppliers or users to construct and own satellite systems, the Department believes that such dangers are outweighed by the competitive benefits of permitting such entry.

36. In urging that vertical integration should not be excluded at this time, the Department states:

"[At] this preliminary stage in satellite development, we do not feel that the entry of satellite suppliers as system operators creates a substantial competitive danger; indeed, the prohibition of such entry could well have adverse competitive effects.

In evaluating the entry of suppliers, it must be realized that here, unlike some markets, each operator will be effectively committed to a single supplier during the system's life so that the maximum diversity of actual manufacturers is limited by the number of independent systems. A regulatory scheme which divorces operators from suppliers thus will not at this time increase the diversity of satellite technologies in use. In fact it may do the opposite by making it more likely that Comsat will be the sole domestic operator. If Comsat provides A.T. & T.'s requirements as well as operates its proposed general purpose system—systems with virtually identical technical requirements—one would expect a single supplier to furnish satellites for both. Indeed, diversity is likely to be further diminished inasmuch as the satellites which Comsat expects to use in its domestic system draw heavily upon the technology already employed in its international system. This technological similarity gives Comsat's international supplier an inside position in supplying Comsat with satellites domestically even though Comsat nominally uses competitive procurement. Consequently, reservation of the domestic market to Comsat could give a single manufacturer virtual domination of the satellite market for civilian communication systems, both domestically and internationally.

Because Comsat's specifications are linked closely to spin stabilized satellites, a field dominated by Hughes, the best hope for a competing satellite supplier is to enter the market directly. Entry bypasses restrictions imposed by operators whose satellite specifications are tied to a different technology, and allows suppliers—at their own risk—to test the technology which they are promoting. Forward integration in these circumstances does increase the barriers to entry for competing suppliers, but at this early stage of development, it may be the only way to encourage the development of rival technologies."

The Department further states that supplier entry is not barred by its "Merger Guidelines" which apply to acquisition of existing firms and provide no normative guidance when, as here, de novo expansion is being considered. With respect to its position in favor of system ownership by satellite users and terrestrial carriers, provided that such authorizations are upon condition that the operators avoid discrimination against other users, the Department notes that the power to abuse depends largely on the absence of competing systems. For both supplier and user applicants, the Department suggests that the Commission could monitor the situation and take measures in the event that demonstrated abuses occur.[18]

that the role of A.T. & T. must be subject to source of business for satellites and since its substantial investment in terrestrial facilities makes it the largest potential competitor to satellite systems, the Department urges that the role of A.T. & T. must be subject to special scrutiny. While not asserting that A.T. & T. should be precluded from owning or otherwise operating a satellite system, the Department recommends that A.T. & T. should be permitted to enter only if competitive systems are authorized and are likely to become operative. It states that the emergence of multiple systems would tend to check the extension or entrenchment of A.T. & T.'s monopoly power, and thus would provide a surer base for the long-run development of a competitive satellite industry.

38. In this connection, the Department comments that the Comsat/A.T. & T. joint application and contractual arrangement, unless carefully circumscribed, could pose a number of impediments. While the contract does not preclude either from owning and operating earth stations or space segments, it "makes the ability of Comsat to offer any communications services depend upon Comsat's power to generate enough business to support an entirely separate system." The Department notes that the agreement need not have been so restrictive. Moreover, even if Comsat is successful in establishing a separate system, the Department asserts that it may be reluctant to enter into full competition with its major customer and stockholder. Since A.T. & T. is not committed to renewal or future requirements, future contracts between them may depend largely upon the continuation of goodwill. Under the circumstances, Comsat might settle on service to the networks and not compete with A.T. & T. in providing other services. Even if not, the force of competition between them would be constrained by close corporate and commercial ties. In addition, the Department states, the A.T. & T. contractual relationship with Comsat forecloses others from competing to supply A.T. & T. with satellite services. This may increase the cost of public message and other communications services, because what is involved is basically a cost plus service. The pressures for rapid technological and service innovation would be less if the contract forecloses the development of independent systems. It is possible that the only general purpose system and the A.T. & T. system would be substantially identical in technology and management. Moreover, Comsat's role as an international carrier and reliance on Hughes compound the situation.

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[18] The Department says, for example, that if Hughes abuses entry by placing a price squeeze on equipment for Comsat, the Commission could require divestment by Hughes. It further notes that the Commission could consider requiring some or all of the following measures, which might make any discrimination in favor of affiliates easier to detect and control: separate corporate entities, separate books and account, separate officers and separate physical facilities. In view of the limited number of expected systems, the Department states that it would be undesirable to require systems not to deal with affiliates.

39. In light of the foregoing, the Department recommends that the Commission disallow the Comsat/A.T. & T. contract unless it is satisfied that Comsat is the least cost supplier.[14] It further urges that both A.T. & T. and Comsat should be barred from providing network program transmission service, at least for an initial period, since this business could provide the nucleus for a viable competitive system. While stating that the Commission should consider the problem of cross-subsidy between A.T. & T. public message and other service offerings, the Department takes the position that if the Commission follows its suggestion as to least cost supplier, the problem of cross-subsidy can be dealt with independently of the domestic satellite proceeding since the question already exists terrestrially.

40. The comments of the State of Alaska are directed primarily towards the particular interests of the State (see also paragraphs 94–97). It points out that the people of Alaska have immediate and imperative social and economic needs for a reliable multipurpose domestic satellite system capable of serving all Alaska with high EIRP[15] and sensitivity and employing a demand assigned multiple access system. Its analysis of the pending applications indicates that the Comsat and RCA proposals offer the best potential for accommodating these needs. If the Commission finds a proliferation of systems economically feasible, the features in the Fairchild proposal would be particularly attractive to Alaska. It further urges the Commission not to grant exclusive authorizations, but rather to follow a policy of continued open entry which would allow new carriers to enter the field to meet expanded demands.

41. The State further notes that the applications and supplemental filings reveal the possibility of a joint venture or coownership in the launching or operation of satellite facilities. The State believes that such a joint venture of coownership might permit economies of costs while assuring maximum utilization of the space segment. While indicating that it may be in the public interest for the Commission to approve or encourage such a venture, the State says the needs of Alaska must be clearly defined. Since the State's market demand is minimal compared to that of Conus, a joint venture (like any commercial enterprise) might delay service to Alaska in order to take advantage of market opportunities in other areas. Criteria must be established within the certificate itself which would assure total and continuing service to Alaska. The State emphasizes that "if the necessities of life in the rest of the nation are to be even approximated in Alaska, such special consideration is both required and entirely proper as an incident of Union."

42. The Postmaster General, noting that some applicants project some type of electronic "mail" transmissions and that no joint position with the Postal Service exists, desires to clarify its position. While the U.S. Postal Service has a vital interest in technological developments in electronic communications and has several concepts under review involving electronic mail handling, it has not arrived at a point where a policy concerning the extent of use of domestic satellites for either data traffic or new services can be formulated.

43. With the exception of the parties referred to in footnote 5 above, other parties addressing the key issue are generally opposed to a monopoly approach. For example, the ABC, CBS, and NBC networks support a multiple grant policy. They state that the detailed proposals already received by the network companies from various applicants reflect the competitive framework under which they were developed, and assert further that the continued availability of alternative sources of supply will undoubtedly benefit all satellite users, including networks. While several parties have urged a limited role for A.T. & T., the networks would "favor the opportunity to consider any proposals submitted by A.T. & T. as well as the proposals submitted by other applicants." CPB and PBS also support a policy of open entry. However, they claim that A.T. & T. should be restricted to leasing channels rather than leasing an entire system. Whether or not A.T. & T.'s satellite traffic would be made available to help support other systems, CPB and PBS urge that the public interest would not be served by permitting A.T. & T. to lease an entire satellite system.

44. The National Cable Television Association, Inc. (NCTA), on behalf of potential users, believe that competition between satellite systems and with terrestrial facilities will encourage innovative marketing and technical concepts and will provide for reliable and low-cost alternatives to present systems. NCTA states that economic conflicts, if any, should not be subject to regulatory resolution by the FCC but rather should be left to the business judgments of those who choose to enter the market.[16] TelePrompTer supports a similar policy, with a special qualification in the case of A.T. & T. which would restrict it to the provision of public message service only, on a limited number of satellite channels in systems established by others.

45. General Electric Co. (GE) cautions the Commission to avoid a premature commitment to a type or types of domestic service which would technically, economically or administratively impede the introduction of new and different satellite usages and systems. In addition to whatever is initially authorized, GE urges the Commission to recognize the desirability of a continued opportunity to develop uses and systems not yet formalized in the pending applications.

C. Replies of the System Applicants to Claims of Disqualification

46. Those applicants who are equipment suppliers, potential users and/or terrestrial carriers—in responding to assertions that they should be disqualified—rely on many of the same arguments made by the Department of Justice as well as on their positions already summarized above. In addition, Western Union states that as a terrestrial common carrier, it has an obligation to expand its services and facilities to meet evolving needs for communications services and should be afforded an opportunty to serve these needs through the latest in modern technology, such as satellite facilities. Moreover, ownership of satellite facilities would enable Western Union to expand its transmission plant and provide additional route capabilities at less than would otherwise be possible.

47. The RCA applicants address particularly the argument that RCA Globcom, an international voice-record carrier, is precluded under section 222 of the Communications Act from engaging in domestic service. They note that the Commission has held that that section prohibits consolidation between an international telegraph carrier and a domestic telegraph carrier.[17] The RCA applicants also point out that their application states they are not requesting authority to provide telegram or telex service within or among the contiguous states (vol. 1, p. 14).[18]

48. In addition to urging that only through encouraging the entry of equipment suppliers (including Hughes) will the Commission be able to create a truly competitive market, MCI Lockheed denies that it is either an equipment manufacturer or a terrestrial carrier. While admittedly a new entity affiliated with such, MCI Lockheed claims (reply comments, pp. 32–33) that its corporate structure is designed to prevent the kind of control to which Comsat alludes.

49. Fairchild, in asserting that equipment suppliers should not be barred, cites Levin, Organization and Control of Communications Satellites, 113 U. Pa. Law Review, pp. 315–357 (1965), as indicating that there are "some sixty hardware companies which manufacture the equipment needed for space devices, ground stations, and booster facilities" and "view the system as a market for their output." Fairchild states that a grant to it would stimulate the satellite supplier market by opening the field to a significant number of major subcontractors and lower-tier suppliers not presently tied with the existing Comsat/Hughes procurement arrangement.

50. Hughes claims that its own market power as an equipment supplier is strictly limited to the extent that there are competitors in that market. The field is one characterized by competitive bidding, and any entity capable of competing for U.S. military or NASA space programs is fully capable of competing for the manufacture of communications satellites. Its reply comments (p. 36, footnote 5) list nine contractors whom Hughes considers to be major in space programs and in direct competition with it. Hughes asserts that its sale of satellite hardware has ranged between 2–5 percent of the total market.

51. With respect to its relationship with TelePrompTer, Hughes says that it owns less than 6 percent of TelePrompTer's stock and is represented by only one person on the 15-man board of directors. In 1967 Hughes entered into a long-term voting agreement under which it is required to give all voting rights to a party over whom it has no control. It does own 50 percent of one CATV system (Theta Cable of California) and 49 percent of TelePrompTer Manhattan CATV Corp., with TelePrompTer owning the balance. Those companies in aggregate, Hughes states, account for only slightly more than 1 percent of the total CATV subscriber market.

52. Concerning its own proposal to distribute CATV programing on a noncarrier basis, Hughes represents as follows: It is willing to take responsibility for acquiring

[14] The Department also suggests that an existing common carrier providing monopoly services to the public should not include any satellite system investment in its rate base until it demonstrates that the cost is comparable to the provision of similar services by existing or prospective terrestrial technology.

[15] Equivalent isotropically radiated power.

[16] NCTA says that its members should have an opportunity to acquire at least one satellite channel on an indefeasible right of use basis, and should in any event have a guaranteed right of access to domestic satellite systems on a reasonable cost basis. It further urges the Commission to allow competition to limit the rates, provided that rates to CATV are not related to distance. (See also paragraph 68.)

[17] Citing File No. 2121–C2–A1–69 (re a request of WUI for consent to acquire a domestic radio common carrier), FCC 70–900, released Aug. 31, 1970.

[18] The RCA applicants urge that they should be allowed to include in their rate base the reasonable and necessary costs necessary to implement the system. It would impede advancement, particularly at this early stage, to do otherwise. Whatever policy the Commission may adopt as to A.T. & T., the RCA applicants assert, should not be made generally applicable.

and assembling a multiple program offering and arranging for the nationwide distribution of that offering to cable systems. While this will require it to stake a substantial private financial commitment, the promise of CATV—plus its contract with GTE—makes this risk acceptable. Hughes is anxious to offer its service to all CATV systems at equitable rates. It wants to build and own the receive-only stations in order to achieve an early program offering capability and because of its belief that operating economies and management efficiency favor ownership by the satellite operator. But it is not essential that Hughes be the owner in every case, and Hughes has no objection to CATV systems owning earth stations when desired. Hughes will guarantee access to its system by these privately owned receive-only earth stations at a lower rate than that charged to CATV systems not owning earth stations.

53. Insofar as access by other CATV program distributors is concerned, Hughes takes the position that they should go to a multipurpose system which would afford a better fit. Prime evening time is valuable to the Hughes program distribution plan, but on a multipurpose common carrier system daytime hours are critical for message and data traffic and a CATV program distributor request for prime time hours could be more easily accommodated. There would be potential savings also to an occasional transmitter through shared use of earth stations. The Hughes system will be subject to FCC licensing regulation and Justice oversight, so that unfair competitive advantages are unlikely. Hughes has no desire to compete with other satellite systems for this business. However, if in fact it is not available, competitively and fairly on other systems, "Hughes will take all reasonable steps necessary as imposed by the Commission to provide fair access on the Hughes 'leased/private use' system to cable program distributors."

54. Comsat states the following as to its relationship with A.T. & T.: Presently, A.T. & T. holds 29 percent of Comsat's stock and elects 20 percent of its board of directors. This, as well as Comsat's role in the Intelsat system, are not matters over which Comsat has any control, since it was authorized by the 1962 Act (with, Comsat notes, the blessing of the Department of Justice). Comsat's rates to others would be fully comparable to those A.T. & T. would pay for comparable services, and there is no foundation for the argument that A.T. & T. would pay less to an independent entity. Comsat asserts that in light of section 215 of the Communications Act, legislation would be necessary for requiring A.T. & T. to use a least cost supplier. However, it concedes that the Commission is not barred from considering cost factors in making public interest determinations under section 214 of that Act. A.T. & T. could not lease channels in several systems without sacrificing real economies of scale. The Comsat/A.T. & T. contractual arrangement does not preclude A.T. & T. from obtaining additional requirements from others, and A.T. & T. is not committed to renewal. If competition is a genuine goal, then all—including any operator providing satellite service to A.T. & T.—should be allowed to compete for the network program transmission business on a long-term contractual basis during the initial period of development. Comsat states that the Department of Justice is ambivalent in proposing that there be almost unlimited entry, and then recommending that shackles be placed on the ability of a satellite operator to provide service to customers of its own choosing and upon the freedom of terrestrial carriers to contract for services.[19]

[19] Comsat also asserts that the Department is inconsistent in condemning the Comsat/A.T. & T. contract but not the Hughes/GTE contract.

55. Comsat further sees no merit to the suggestion that A.T. & T. and Comsat would be reluctant to compete vigorously with each other. Its reply comments (pp. 17–25) cite several instances where Comsat claims they have done so. Nor is there merit to the suggestion that A.T. & T. might deter Comsat from making major technical innovations in the satellite field. Comsat has a multimillion dollar laboratory facility with a professional staff of about 140 engineers and scientists and an additional 200 support personnel, whose efforts are directed solely to applied research and development in the field of communications satellite technology. Comsat gives examples of innovations it has promoted[20] and of programs now underway at the Comsat Laboratories with potential application both to the global satellite system and to domestic satellite facilities.[21]

56. A.T. & T. states that as a carrier providing a wide variety of communications services, and in order for the general public (including the individual telephone user) to gain the maximum benefits from the use of satellites for communications purposes, it is essential that A.T. & T. be authorized to use satellites as an integral part of its nationwide communications network. Large increases in communications capacity will be needed during the 1970's to provide for the growth of existing services and new services, such as Picturephone. Satellites can be of considerable benefit in meeting this need, particularly the ability to shift capacity at different times between various pairs of earth stations to meet changing traffic loads and unexpected overloads. A.T. & T.'s terrestrial network is a complex of interconnected and interchangeable facilities. Its proposed satellite system has been planned in relation to the existing network and expected expansions thereof. Other applicants have planned on the basis of their special purposes, not to meet A.T. & T.'s needs as part of its overall system. Integration of satellite facilities into A.T. & T.'s total network is a dynamic process involving careful planning as to future expansion of such network and as to the most economical way of meeting its total service requirements. To make effective use of satellites, A.T. & T. must have reasonable assurance as to the types of facilities that will be available to it, and confidence in the timing of new facilities and their subsequent operation. Arbitrary restrictions on the use of satellite facilities for particular types of services would lead to inefficiency and excess costs. A.T. & T. must exercise its general responsibility to employ the best and most economical mix of facilities and should be free to employ, for its services, its own facilities—both satellite and terrestrial—in order to provide the highest quality service at the lowest overall cost.

[20] E.g., wideband antenna feeds, low-noise parametric amplifiers, and high-power traveling wave tube amplifiers in the past, and now—frequency reuse and Spade and time division multiple access techniques.

[21] E.g., (1) in the basic spacecraft area: The development of advanced stabilization systems, improved thrusters, high efficiency solar cells, and advanced battery techniques and fuel cells; and (2) in communications technology: the development of compression systems for digital voice communications, echo suppression techniques for multihop satellites, high reliability earth terminal equipment, improved lightweight filters, components for use in systems operating above 10 GHz, and the conduct of original studies in intersymbol interference in digital communications. Comsat also states that experimental operations are planned for the types of small-aperture earth stations that might be employed with its proposed multipurpose domestic system. It has proposed experiments in its domestic satellites in the 12/13 and 20/30 GHz bands, and is now performing a major propagation experiment for NASA to obtain data in the 12 and 18 GHz bands both on signal attenuation and on optimum spacing for diversity stations.

57. In response to the contention that it should be limited to leasing channel capacity in systems of others, A.T. & T. claims that leasing communications capacity from other suppliers "is not the most efficient or economical way of providing communications services to the general public on a nationwide basis." According to A.T. & T., none of the such parties has made any attempt to show how A.T. & T. could piece together an efficient and economical domestic satellite system from the capacity available from others, nor have they shown how A.T. & T. could integrate those facilities efficiently and economically into its intercity network.[22] If A.T. & T. were limited to leasing satellite channels from other systems, this would impair its managerial flexibility which is essential to efficient and economical engineering, planning and operation of its network facilities. Leasing would substitute therefor reliance on piecemeal additions of transmission channels obtained from others, operated at uncertain performance objectives over which A.T. & T. had little, if any, control (e.g., worry about the potential noise performance of certain other systems). Leasing is not only operationally impractical, but it would also stifle participation by A.T. & T. in the development of new generations of satellites at the higher frequencies. Therefore, A.T. & T. is "firmly opposed to leasing satellite capacity from others regardless of the rate base treatment of lease costs." It suggests, moreover, that this is a "thinly disguised effort by other applicants to support their systems at the expense of message telecommunications users."

58. A.T. & T. also objects to the limitations the Department of Justice would have imposed on its entry. It states that the argument that investment in satellite facilities should not be included in A.T. & T.'s rate base unless such cost is demonstrably comparable to the provision of similar service by existing or prospective terrestrial technology, is unrealistic, unworkable and should be rejected. This argument does not take into account the manner in which new technology is developed—i.e., that it must be planned for, tested, experimented with, and developed in use. The benefits can be realized only after operational development of new technology. Moreover, while cost is relevant, it is not the only factor to be considered in an investment decision in new facilities; other factors include diversification of facilities, flexibility, and adaptability of facilities. The Department's suggested cost standard of comparability, which could lead unfairly to the retroactive rejection of the carrier's book cost of new plant, is too indefinite to be capable of rational application. The Department does not define com-

[22] A.T. & T. notes that Fairchild is the only applicant to propose a single, high-capacity, multiple-use system which would probably foreclose all other applicants including A.T. & T. It questions the overall technical feasibility of the Fairchild proposal for A.T. & T.'s purposes, and urges that all should not be required to go to Fairchild. This would result in unnecessary operational compromises for the users, reduce their incentive to engineer the best system for their current and future needs, and discourage their efforts towards better second generation systems. A.T. & T. also notes that Fairchild's costs are not capable of comparison with those in A.T. & T.'s 1970 Annual Report, which include other items such as signaling, multiplex and test equipment as well.

parability, propose guidelines for judging comparability, or suggest at what point in time it should be applied. The same standard, if it were to govern other types of facilities, would impede the introduction of new technology there as well.

59. A.T. & T. further asserts that the "least cost supplier" proposal is even more stringent and undesirable since it is rigidly based on a single unrealistic standard—cost. It does not take account of other factors such as product performance and quality, reliability, and the experience of the supplier. Moreover, standards of cost comparison would be extremely difficult to administer. Such a standard is unprecedented even in formal competitive bidding procedures. For example, § 25.172(d) of the Commission's rules uses the standard: "Most advantageous to the procurer, price and other factors considered." The Armed Services Procurement Regulations (§ 2–407.1) are similar: "Most advantageous to the government, price and other factors considered." A project of this type requires great expertise, resources and judgment available from only a few organizations in the industry. The capital risks are so great that any applicant should be free to require the highest standard in its performance specifications and in the selection of contractors. A.T. & T.'s selection of Comsat was a reasoned decision to acquire by contract the services of the most experienced overall designer and operator of commercial communications satellites in the world. It places at A.T. & T.'s disposal the necessary expertise to establish the spacecraft portion of its system in the shortest possible time with the most efficient utilization of resources and capital.

60. The concern of some parties over the A.T. & T./Comsat relationship may reflect a misunderstanding as to the nature of that relationship. As Comsat points out, the relationship was established pursuant to the 1962 Act, was authorized by the Commission, and A.T. & T. is entitled to elect only three directors. There is no evidence that this arrangement permits A.T. & T. to exert control over Comsat or that Comsat defers to A.T. & T. If Congress should decide that the arrangement is no longer necessary or in the public interest, it can and presumably would amend the 1962 Act. Until that time, it would be unfair to penalize either Comsat or A.T. & T. for that reason.

61. In responding to claims that its services provided by satellite should be restricted, A.T. & T. states that the proposed limitation against program transmission service by it or its lessor is unnecessary and would result in less rather than more competition. The network interests are adequately protected in the competitive environment which has arisen in this proceeding. The exclusion of private line services is unrealistic, undesirable, and should be rejected by the Commission. Private line services are now mixed on intercity facilities and separated only at junction stations and operations centers to be routed through private line terminal equipment. If excluded from satellite, these services would be additional expense to A.T. & T. to insure physical separation, ultimately increasing the cost to the consumer. Such segregation is not consistent with recognized principles of sound network engineering and management, and would lead to an uneconomic use of facilities.

62. A.T. & T. states that it "will not adopt or practice a policy of interservice subsidy and its proposed use of satellites will not be such as to discourage or foreclose entry by potential entrants because of such policy." No change in existing tariffs is contemplated as a result of its use of satellites. Like the Department of Justice, A.T. & T. believes that the question of cross-subsidy is more appropriately addressed in a rate inquiry since it is relevant to satellites in precisely the same way as it is relevant to terrestrial transmission facilities. The Commission has ample authority to deal with the question of interservice subsidy in the normal course of regulation, and now has pending proceedings in which the relative rate levels of different classes of service are at issue (Dockets Nos. 18128, 18684, 18718 and Phase I–B of Docket No. 16258). There is no need to impose special limitations for satellites at this time. Of course, A.T. & T. will have incentive to reduce satellite costs in order to achieve more attractive rates for competitive and public message services alike, and thereby to promote the greater usage of all.

63. Finally, A.T. & T. states that there is no basis for concern that A.T. & T. will be constrained as to innovation or will constrain others. It has been a leader in innovation and this leadership will continue if it is allowed freedom to use satellites. Moreover, its liberal patent policies would permit others to share in its technical developments. A.T. & T.'s application has not foreclosed others from applying for systems with technical and service innovations. The Commission should not impose artificial barriers to entry or handicap one competitor in favor of another.

II. EARTH STATION OWNERSHIP, ACCESS, AND INTERCONNECTION

64. In the 1970 Report (paragraph 19) the Commission stated that applicants might propose "the shared use of some facilities by different systems, or a division in the ownership of various system components (e.g., user ownership of earth stations to afford direct access to the space segment of a common carrier or cooperative system.)" It was further contemplated that a carrier entrant in the space segment would be capable of dealing directly with customers for its services, i.e., that the so-called "authorized user" policy in the international communications satellite field would not be applied to domestic service (paragraph 27). The Commission proposed (id.) a flexible policy with respect to access to earth stations and interconnection, including new construction by the system operator or users, the purchase or lease of access facilities from terrestrial carriers, and arrangements between satellite and terrestrial carriers for joint through service. The 1970 Report (paragraph 27) stated the Commission's "expectation that existing carriers will not thwart or hinder the development of new and expanded common carrier services envisaged by this policy by the imposition of arbitrary restrictions on interconnection or through route arrangements or so-called exchange of facilities among carriers—established and new—or other means of accomplishing the desired objective of providing service directly to the customer."

A. Earth Station Ownership

65. Both broadcast station and CATV interests urge the Commission to permit user ownership of special purpose earth stations. The Network Affiliates believe strongly that local television stations should be permitted to own or control any receive-only earth stations used to provide television interconnection to them via satellite. They support the prototype application filed by Phoenix (paragraph 33), and assert that the principle there reflected is the most practicable way of assuring that broadcast station users receive some of the benefits expected to result from the domestic satellite technology. Pointing to the difference between the needs of the networks and those of the independently-owned affiliated stations, the Network Affiliates further assert that local ownership would preserve the broadcasters' independence and flexibility to determine their nonlocal program schedules in the best interests of the public they serve. Since the programing distributed via satellite may include nonnetwork programing, the local stations allegedly need control over channel switching. Moreover, ownership of receive-only earth stations would permit broadcasters to choose optimum sites for their purposes, a factor claimed to be especially important in sparsely settled areas,[22] and free them from carrier-determined construction timetables. Further, most stations are staffed with highly qualified electronic engineers with experience in microwave distribution of video signals—experience readily transferable to earth station operations.

66. While relying on the foregoing comments, applicant Phoenix amplifies its position as follows: In addition to national network programs, local affiliated and nonaffiliated stations need flexibility to gain access to satellite channels carrying television programs from various sources (local and area originated programs, nationally syndicated programs, and specialized programing networks) that they have been authorized to broadcast. User-owned earth stations could facilitate the establishment of new and diverse commercial and noncommercial networks, since the costs and complexity of interconnection would be substantially reduced. User ownership would be a matter of economic necessity to stations in smaller markets which are not now connected by terrestrial carriers and have been providing their own intercity relay facilities. Moreover, since costs are not a function of distance in satellite relay, the technology is particularly suitable for providing interconnection to stations in sparsely settled, remote areas. There is no assurance that network or carrier owned stations would be located close enough to stations in such areas. In addition, user ownership would provide a broader economic base for raising money and might bring widespread use sooner than from a monopoly owner. Further, user-owned earth stations would not be part of a carrier's rate base, and would therefore serve to lower overall rates of the satellite carrier. Finally, Phoenix asserts that user owners would take all necessary and appropriate steps to make these facilities technically compatible with satellite and ground facilities operated by carriers or other entities, and would cooperate in establishing specifications, planning construction, testing and operation of such facilities.

67. The CATV earth station applicants (TelePrompTer, Twin County, LVO Cable and United Video) urge the Commission to permit qualified parties, including CATV systems and CATV carriers, who are not affiliated with the system licensee to own and operate receive-only earth stations with one or more systems. They state: "Subject to applicable law, CATV owned earth terminals should have access to programing transmitted by all satellite systems, thus increasing the sources from which diverse programing could be obtained." CATV ownership would ease the financial burden on the system operator, and since such earth stations would probably be purchased on a turn key basis, any economies of scale in mass production would be realized.

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[22] The Network Affiliates note, for example, that Comsat's proposed initial configuration of earth stations does not include any in North Dakota, Montana, Wyoming, and Idaho, and only one each in South Dakota, Utah, Nevada, and Arkansas. Moreover, Comsat's proposal would locate a receive-only station at Talkeetna, Alaska, with microwave interconnection to Anchorage and Fairbanks. While this may be adequate for public message service, the Network Affiliates assert that these two cities should have their own receive-only earth stations.

While satellite system users should have the option of using their own or common carrier receive-only earth stations, they should not be required to subsidize large multipurpose earth stations. CATV systems may accept a higher level of interference, and do not heed the degree of quality that might be required by other users. Further, if a satellite system operator controls not only the space segment, but also the programing to be carried, the earth stations (including location, priority in construction schedules, and access) and portions of the terrestrial distribution system as well, there would be too much control in one entity. Regardless of ownership, however, the Commission should guarantee to CATV and others the right of access to satellite channels, as well as access to transmit-receive earth stations, under fair conditions and distance insensitive rates.

68. The position of the CATV applicants is supported by NCTA and other CATV interests. NCTA urges, in addition, that competitive earth stations would serve to lower rates and spread responsibility for financing. Operators of CATV systems should have the right to own earth stations, or to participate with other local users in each community in the ownership of earth stations. If an opportunity for ownership is not provided, the Commission should in any event guarantee a right of access to the entire domestic satellite system, including earth stations, on a reasonable cost basis.[24] Comments in a similar vein were filed by entities such as American Cable Television, Inc., et al.; Service Electric Cable TV; and Time, Inc.[25] Parties who are miscellaneous carriers serving CATV systems (e.g., Frank K. Spain, et al., and Racom, Inc.) urge further than such carriers should be permitted to have access to earth stations via their own facilities and to share in earth station ownership on a basis proportionate to use. One such party (CPI Telecommunications, Inc., an affiliate of West Texas Microwave Co.) asserts that regional specialized carriers, rather than broadcast stations and/or CATV systems, should own receive-only facilities.

69. All of the system applicants except Comsat have either affirmatively indicated a willingness to afford users the option of owning receive-only earth stations or have expressed no opinion on the subject. In urging that only its proposed systems should be authorized, Comsat argues that earth station ownership should be limited to it and other common carriers. It claims that a multiplicity of earth stations would dissipate economies of scale. Comsat further states that all receive-only earth stations should be regarded as potential transmit-receive earth stations, and should be authorized only to common carriers. A.T. & T. would permit access to its space segment through earth stations of others. GTE (which does not propose program transmission service to broadcast stations or CATV systems) asserts that the Commission should not authorize earth stations to a few large users to the detriment of the vast majority of users. For the position of Hughes, see paragraphs 52–53. Most system applicants (e.g., Fairchild, MCI Lockheed, Western Union, the RCA applicants) would be willing to afford system access through earth stations owned by other carriers or users, and/or to share earth station ownership on the basis of use.[26] Further, most support the principle of nondiscriminatory and equitable access to earth stations.

70. As for other parties, the Department of Justice sees no problem in user ownership of receive-only earth stations, but states that transmit stations should be considered along with system applications since spectrum usage is involved. However, even here the Department envisages that a variety of ownership patterns might emerge. The United States Independent Telephone Association (USITA) asserts that earth station ownership should be limited to existing carriers, with participation by the carrier in whose operating territory the earth station is located. ITT World Communications, Inc., Western Union International, and United Telephone System indicate an interest in participating in earth station ownership. One party, TVC of California, Inc., and Con Sumers, Inc., apparently is of the view that space segment ownership should be divorced from earth station ownership. GE suggests that the Commission should make possible the most diversified access, tempered only by constraints of a truly practical nature.

B. Access and interconnection

71. With few exceptions (notably, GTE) the parties are generally in favor of the Commission's proposal not to apply the "authorized user" policy in the domestic field. Most system applicants have applied for their own terrestrial interconnection facilities, in whole or in part. GTE proposes to use its own facilities to interconnect with existing terrestrial routes of A.T. & T. Some applicants (e.g., MCI Lockheed, Fairchild, the RCA applicants) are willing to afford users the option of end-to-end service by the system operator (either through its own facilities or through facilities leased by it) or of interconnection in whole or in part through facilities of terrestrial carriers or private systems.

72. Comsat, which prefers not to provide its own terrestrial interconnection facilities, urges that rule making is necessary in this area because neither A.T. & T. nor GTE is willing to provide such interconnection on a long-term, fixed price, carrier-to-carrier basis. According to Comsat, the provision of interconnection facilities on a tariff basis is not consistent with the concept of end-to-end service. WTCI also asserts that A.T. & T. should be required to interconnect with satellite carriers on a carrier-to-carrier basis, without undue administrative delays. MCI Lockheed shares the view that existing carriers should cooperate. In view of Comsat's difficulties and the GTE position (restricting access to authorized users,)[27] the Department of Justice urges the Commission to reaffirm paragraph 27 of the 1970 report, which it endorses. The Department further asserts that the Commission has power, under section 201(a) of the Communications Act, to adopt rules requiring common carriers not to inhibit the connection of customers with earth stations through arbitrary restrictions or tariffs.[28]

73. A.T. & T. states that other carriers or or private customers could have access to A.T. & T. earth stations most efficiently and economically on A.T. & T. terrestrial connecting facilities. While access by other means is not precluded, it does not appear practical since A.T. & T. does not contemplate the installation of multiplex equipment at its earth stations.[29] As for supplying interconnection service to other systems, A.T. & T. believes that regulated carriers should, to the extent practicable, assume responsibility for end-to-end service. However, subject to availability, A.T. & T. will lease to such carriers the terrestrial facilities that may be required to reach their customers' premises.

74. A.T. & T. states that the "terms and conditions of interconnection of such other systems with the Bell System intercity network should be established on a basis to maintain economical means of routing communications, to avoid subsidy of any such satellite system, and to conform to principles of sound engineering, operations and control." While asserting that policies and practices should be the same as for the terrestrial field, A.T. & T. claims that it would be premature to attempt to formulate specific rules and guidelines when the types, number and configuration of systems to be established and their customers are unknown. It states: "Before A.T. & T. is prepared to interconnect with another carrier for provision of a service in which A.T. & T. participates, especially switched service, much more detailed information and justification of the costs and possible penalties to be incurred will be required to permit an evaluation of the benefits to be realized." [30]

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[24] While not advocating common carrier operation only, NCTA requests the Commission to make clear that members of the CATV industry, as well as others, have the opportunity to acquire on an indefeasible right of use basis at least one satellite channel and until such acquisition have guaranteed access to domestic satellite facilities.

[25] Service Electric Cable TV, Inc., which has a CATV system in the Allentown-Bethlehem market competitive with that of applicant Twin County, urges the Commission to condition any grant on nondiscriminatory access by other local users of the same type. Time, Inc. asserts that CATV operators should have the option of owning earth terminals (receive-only or transmit-receive) and of leasing satellite channels on a fully dedicated or occasional use basis.

[26] While willing to permit broadcaster ownership of receive-only earth stations, Western Union urges the Commission not to adopt rules in this area but rather to permit the affected entities to resolve this question. The RCA applicants are against joint ownership, since it would allegedly be undesirable to withdraw control from the system carrier responsible for providing service. MCI Lockheed states that it would assist broadcast stations and CATV systems desiring to own earth stations by providing engineering standards and specifications, and would offer for purchase or long-term lease receive-only facilities on a turn key basis (with a maintenance contract). The lease could include option-to-purchase provisions if desired. It is also willing to cooperate with several users (e.g., network affiliates, independent broadcasters, CATV systems, etc.) to establish joint lease or ownership arrangements.

[27] Apart from asserting that the authorized user policy should apply and that "all authorized users should have nondiscriminatory and equitable access to earth stations," GTE does not discuss the question of interconnection.

[28] The Department further asserts that the Commission is not precluded from exercising such power because it has sought clarifying legislation in the past, citing: United States v. Southwestern Cable Co., 392 U.S. 157 (1968); American Trucking Association v. Atchison, Topeka and S.F. Ry. Co., 387 U.S. 397 (1967).

[29] A.T. & T. further notes that a multiplicity of interconnection routes would compound frequency coordination difficulties.

[30] With respect to the GTE companies, A.T. & T. states that they have not yet supplied detailed information regarding arrangements for handling traffic from their operating territories to the entire Numbering Plan Areas in the general region of their proposed earth stations. Moreover, they have allegedly not given adequate consideration to costs and other problems of terminating, or to requirements for establishing and operating terrestrial links to the landline network, or to the impact of changes in the routing and switching of GTE traffic on the intercity network.

75. Western Union states that its policy requires reasonable safeguards against harm to personnel and facilities, where necessary, as well as network control and compatible equipment. Within that framework, Western Union will "meet all reasonable requests for interconnection of customer provided facilities and equipment." Where, after a reasonable start up period, Western Union is offering satellite channel service directly to the public, it intends to permit interconnection with other common carriers to reach customer locations or with customer provided facilities and equipment under the policy described above.

III. PROCUREMENT

76. In paragraph 28 of the 1970 report, the Commission requested comments on its authority to adopt domestic procurement rules patterned after those promulgated under the 1962 Act for some facilities used in conjunction with the Intelsat system (Part 25, Subpart B), and on whether any modifications would be appropriate. Two system applicants, Hughes and Fairchild, did not comment on this question. Western Union, A.T. & T., and GTE assert that the Commission lacks authority in light of the provisions of section 215(a) of the Communications Act and various statements of Commission representatives to Congressional committees. MCI Lockheed and Comsat also doubt the Commission's authority under the 1934 Act (see also paragraph 54). Western Union, Comsat, and the RCA applicants state that they will, in any event, follow a policy of competitive bidding. The RCA applicants further take the position that competitive bidding should be required for all system hardware and services.

77. Apart from the Commission's authority, several parties question the desirability of procurement rules in the domestic field. WTCI says that it wants to exercise its own decisional process as to procurement. Comsat questions the effectiveness of any rules that might be adopted insofar as Hughes, Fairchild, MCI Lockheed and RCA are concerned. Western Union asserts that unlike in the international satellite area, no unique situation is presented by domestic satellite which would make procurement rules necessary or desirable. It claims that section 35.03–7 of the rules[21] give the Commission adequate surveillance without the necessity of promulgating detailed procurement rules. Moreover, Western Union states that the administration to the carrier would be time-consuming and involve added expense. GE states that the Commission need not resolve the question of its jurisdiction over procurement until after it decides on the number and nature of the systems to be authorized. If there is to be a monopoly or near monopoly, then procurement rules are almost imperative. However, if there is open entry, GE believes that procurement rules are unnecessary or should be only minimal in nature.

78. MCI Lockheed urges that, with a policy of open entry, there would be sufficient competitive spurs to ensure that satellite operators contract for system and other equipment possessing the best possible combination of quality and price. Enactment of detailed procurement regulations would only constrain the effectiveness of procurement operations and discourage the use of diverse or innovative procurement techniques. Moreover, the viables entering into the complex process of designing and building a domestic satellite system make it nearly impossible to devise an a priori set of detailed regulations to stratify procurement. The more formal and detailed the regulations, the greater the burden, expense and delay placed upon the system operator. MCI Lockheed believes in competition in this area, as well as among systems; but the best way to achieve this goal is to keep the procurement process relatively unfettered by Government regulation.

79. The Department of Justice asserts that competitive procurement is required by the 1962 statute for Comsat and would, in general, be sound policy insofar as rate regulated carriers are concerned. The Department takes no position on whether the Commission can require competitive bidding in light of section 215 of the Communications Act. However, as indicated in paragraph 39 above, the Department urges that the Commission can deny a section 214 authorization if a carrier fails to demonstrate that the proposed investment is the most efficient way of satisfying its requirements. It suggests that A.T. & T. and other existing common carriers should be required to demonstrate that they are fulfilling their needs through the "least cost supplier." (For the contrary position of Comsat and A.T. & T., see paragraphs 54 and 59.) The Department states that there is less justification for competitive procurement for operators that are not subject to rate regulation, and that this would not be worth the administrative burden. While satellite manufacturers can be expected to use their own equipment, competitive bidding will not cure such a situation.

80. The most comprehensive comments on procurement were filed by an individual, Ronald S. Kahn, as a result of a personal research project conducted while he was a student at the Columbia University School of Law. Mr. Kahn discusses at some length various procurement statutes; rules and regulations pertaining to other government agencies; the legal authorities he believes to be relevant to the question of the Commission's authority; and the factors he considers to be pertinent in the choice of a procurement strategy. Mr. Kahn concludes that the Commission lacks authority to implement competitive bidding as a matter of law (Comments, p. 61), and that, as a matter of policy, procurement policies in the domestic satellite field should be reviewable only as and to the extent that they affect rates (Comments, pp. 1, 74–100). He states (id., p. 1): "Procurement policies in this market are a managerial function not suitable for effective regulation."[22]

IV. SERVICE FOR EDUCATIONAL PURPOSES

81. The 1970 Report (paragraph 34(b) (1) and (2)) requested applicants proposing broadcast program transmission to state the terms and conditions under which satellite channels would be made available for noncommercial educational networks.[23] The Commission also requested all applicants for multipurpose or specialized systems to indicate the terms and conditions under which satellite services would be available for data and computer usage in meeting the instructional, educational, and administrative requirements of educational institutions. Noting that previous parties to the proceeding, such as Comsat and the ABC network, had offered to provide satellite channels to public broadcasting without charge, the Commission said it "believed this to be in the public interest." On March 22, 1971, all pending applicants were furnished with a copy of a letter from Mr. John W. Macy, Jr., president of the Corporation for Public Broadcasting, with a request that each review, and if necessary supplement, its application in light of the concerns expressed in Mr. Macy's letter.

82. Three system applicants—Hughes, MCI Lockheed and Fairchild—propose some form of free service for public broadcasting. Hughes is willing to afford CPB and PBS two (backed up and noninterruptible) satellite channels without charge, and free access to the Hughes earth stations. MCI Lockheed would make available for transmission the equivalent of five television channels for educational use, including PBS in Conus, for 5 years without charge and thereafter at a fraction of commercial rates for the remainder of the satellite life. The MCI Lockheed proposal also includes the services of its downtown earth stations. Fairchild offers two free satellite transponders for public television in Conus, a shared-service to off-shore locations, and free part-time use of two transponders to the medical community. It also proposes optional free use of one or two transponders at 2 GHz for instructional television and message service to remote areas if earth stations are provided by other entities.

83. WTCI is willing to abide by an FCC decision to supply channels at reduced rates or without cost provided that the cost is distributed among all satellite systems or users in some fair and equitable manner. The RCA applicants also assert that the Commission should apply a uniform policy to all the applicants. While preferring reduced rates on an incremental cost basis, the RCA applicants would defer to a Commission decision as to free service for noncommercial networks in the event that they should provide service to commerical networks. Though the proposed systems of A.T. & T. and GTE are oriented towards other services, they take the position that satellite service to PBS should be on the same terms as terrestrially, i.e., on an incremental cost basis.

84. Pointing out that the provision of satellite channels at reduced rates or without cost entails a form of subsidy, Western Union questions whether it is fair to impose such a burden on a single entity or industry if the benefits go to the entire nation. Subject to FCC approval, Western Union would offer educational television channels on an incremental cost basis, or at even lower rates provided that the Commission established ground rules which apply equally to all contenders for the major network business. It states that the Commission should not permit service to CPB to be a pawn in the evaluation of the domestic satellite proposals. Rather, the Commission should define the needs for public broadcasting and indicate the entities responsible for supporting those needs.

85. Comsat also notes that transmission service to CPB—unless rendered on an interruptible, when available, basis from spare capacity—results in cost to someone. Any domestic system would have revenue requirements which must be met by system users and Comsat, as well as other system applicants, are not yet sure who such users will be. Thus, "categorical commitments to CPB that depend on the support of the paying users have little or no validity while those users are still in negotiation with the applicants to operate the system." Comsat, which like Western Union urges the Commission to

[21] Section 35.03–7 requires that all "charges to accounts prescribed in this system of accounts for plant, operating revenues, and for operating expenses * * * shall be just and reasonable, and any payments by the carrier in excess of such just and reasonable charges shall be included in account 5299, 'Other deductions from ordinary income.'"

[22] At pages 101 through 108 of his comments, Mr. Kahn sets forth proposed procurement rules in the event that the Commission should opt for that course.

[23] Applicants proposing broadcast program transmission were also requested to address the possibility of realizing a "peoples dividend" to provide some funds for programming by noncommercial educational stations, as suggested by the Ford Foundation.

establish ground rules,[34] very much hopes that "some form of preferential service can be worked out for public broadcasting in a fashion which meets the genuine requirements of CPB, and produces unit costs which are acceptable to the yet undecided commercial users of a domestic satellite system."

86. The networks state that they were concerned with the needs of CPB in developing basic capacity requirements and believe that continued cooperation with CPB in "technical evaluative areas" would be desirable. They further state that in a multipurpose system—with the commercial networks being only one class of user—CPB should be expected to deal directly with the carrier to develop a rate structure and facility requirement meeting its needs "without commercial network commitment to underwrite the costs or determine the configuration of the system needed for noncommercial program distribution." The prototype receive-only earth station application, filed by Phoenix and supported by the Affiliates Associations, proposes that public broadcasting stations could use such earth stations without charge (except for terrestrial interconnection).

87. CPB and PBS have filed extensive comments taking the position that a minimum network service should be provided without charge.[35] The rationale for this position is essentially as follows:

The American people have invested more than $20 billion in the space program. Communication satellite technology is derived from that investment. The public thus has a real and direct interest in the cost-savings inherent in the satellite technology. As the submissions in this docket indicate, the potential cost-savings are substantial. [Footnote omitted.] The bulk of these savings will accrue in any event to private industry. We ask only that a small portion be used to provide the American people with a partial return on their investment, in the form of free interconnection for public broadcasting.

CPB and PBS also rely on the Public Broadcasting Act of 1967, prior statements of the Commission, and the submissions of various applicants in this proceeding. In the latter connection, CPB and PBS remark that the present position of the networks is a disappointing about-face from their prior statements before this Commission, in appearances before congressional committees and in public speeches (CPB and PBS comments, pages 23–27).

88. Contrary to Comsat's suggestion (footnote 34), they claim that the extent of free service requested is modest. This minimum requirement (described in paragraph 37 of this second report) does not take account of public broadcasting's potential for growth, or go into the requirements of a second program service or instructional uses.[36] Moreover, even with such a minimum network, public broadcasting would still be required to construct its own studio links and additional stations to meet its needs alone.

89. In response to the argument that there is no such thing as "free" service, CPB and PBS state: "The present applicants are the beneficiaries of a public subsidy. To deny free rates for public broadcasting is simply to increase this subsidy and to deny the taxpayer this return on his investment." Moreover, they assert that the incremental cost of free interconnection service for public broadcasting is quite small in relationship to overall system costs, and will not deter other users from making maximum use of the satellite technology since it permits such substantial savings over terrestrial communications.[37]

90. The State of Alaska, the National Association of Educational Broadcasters, the Joint Council of Educational Telecommunications, and the National Citizens Committee for Broadcasting support the concept of free interconnection service for public broadcasting. The Joint Council further urges the Commission to recognize that educational needs are broader—including educational data transmission, library access service, etc.—and may not be the same as commercial needs. The Joint Council states that facilities should be made equally available to medical, health and other public service oriented users. The State of Alaska recommends that as a condition precedent to any grant the Commission require each applicant to offer free ITV/ETV and radio access to prospective users of both the space segment and terrestrial facilities. NCTA opposes free service for educational television. While American Cable Television, Inc., et al. has doubts about free or reduced rates for anyone, it suggests that any special provision for educational television should also apply to satellite channels used for the distribution of educational programing to CATV where provided by bona fide educational institutions.

91. The State of Hawaii supports special low cost rates (on an incremental cost basis) for educational transmissions, including those of PBS which would encompass service to Hawaii. Satellite transmission of programs arranged for by CPB, although very important, will not in and of itself meet the educational needs of Hawaii and the Nation. All types of recognized educational institutions should be eligible, with the goal being two-way exchange of voice, data, facsimile and television—in accordance with the principles reflected both in the Public Broadcasting Act of 1967 (which applied to public educational broadcast stations) and in the Higher Education Act of 1968 (which applied to institutions of higher education). If available, free or low cost interconnection would be used extensively by Hawaii's educational institutions for instruction, research and development in areas of education, health and community services. Low cost communication is essential to sustain quality education in Hawaii. Moreover, the WARC allocations (e.g., 2 GHz) raise the possibility for an extension of educational networking in the Pacific Basin, utilizing a strong educational base in Hawaii reinforced by low cost domestic satellite links to major centers of education in Conus.

V. ALASKA AND HAWAII

92. The 1970 report, in requesting each applicant to state whether the proposed system would be capable of providing service to Alaska and Hawaii, stated (paragraph 34 (a)):[38]

We believe that national unity will be served if domestic systems have the capability of serving these two States, in the absence of overriding considerations to the contrary. Hawaii is presently receiving communications satellite service via the facilities of Intelsat, though not the type of broadcast program distribution that has been proposed in this proceeding, and we have authorized an earth station in Alaska. Our belief that domestic systems should be capable of serving Hawaii and Alaska does not reflect any view with respect to the continued use of Intelsat facilities. But unless the capability is built into the domestic facilities at the outset, the possibility of providing any service to these States by means of these facilities will be precluded.

93. All of the proposed systems have satellite capability of serving Alaska, and all but one (Comsat/A.T. & T.) could serve Hawaii.[39] However, only two system applicants have actually applied for earth stations in Alaska: RCA/Alascom (four transmit-receive, plus terrestrial interconnection facilities) and Comsat (two transmit-receive and one receive-only). Three system applicants have applied for earth stations in Hawaii: Western Union (one transmit-receive), the RCA applicants (one transmit-receive), and Comsat (one receive-only). In addition, Hawaiian Telco—though of the view that Hawaii should not be part of any domestic system at this time—has applied for an earth station (transmit-receive) to operate with any system required to serve Hawaii.

94. The State of Alaska describes its situation and needs as follows:

The population of Alaska is substantially less than one-half million, with a significant portion of that total scattered in relatively tiny rural population pockets (the Alaska "bush") throughout the State's huge area. By and large, the bush population is of native origin. With the exception of the south-central section of the State, significant rail and road systems do not exist either between the bush and urban Alaska or within the bush itself. Rural air service, particularly during the long severe winters, is infrequent and uncertain. Electricity, running water, and paved streets are in the main not pres-

[34] Comsat suggests that the stated requirements of CPB and PBS may be inflated by the expectation of free service.

[35] Among other things, their comments describe the development of public broadcasting, its growth and the institutional framework (i.e., the structure and role of CPB, PBS, and NPR). Appendices list public television stations in Table 1 (indicating where interconnection would be required), PBS originating stations in Table 2, and PNR member stations in Table 3. In addition, they have commissioned and made available to the Commission's staff two technical studies: (1) An Investigation of Network Television Distribution Satellite Systems, prepared in February 1971 by the Space Systems Organization of the GE Space Division; and (2) A Technical Survey and Analysis of Eight Proposed Domestic Satellite Systems Regarding Their Ability to Satisfy Public Broadcasting's Objectives, dated Apr. 15, 1971, and prepared by National Scientific Laboratories, Inc.

[36] As examples of potential instructional uses, CPB and PBS point to state and regional instructional networks, an "open university of the air" that would permit degree programs, and additional programing for selective audiences potentially possible by relating the satellite and cable television technologies.

[37] In commenting on the various applications, CPB and PBS state that the Hughes' offer would go far toward meeting their needs, and that most other proposals (apart from A.T. & T.) could accommodate public broadcasting needs if the particular applicant voluntarily or pursuant to a Commission requirement afforded free interconnection service. CPB and PBS further urge the Commission not to authorize the 2 GHz band for any commercial use, whether or not called experimental.

[38] In its comments the State of Alaska "extends its appreciation to the Commission for having initially designated Alaska service as a matter for specific concern by the applicants," adding that it would be "difficult to overstate the benefits rendered to the State by that simple act." The State of Hawaii also "expresses its appreciation for the concern for its needs shown by the Commission."

[39] In addition, three systems (Comsat, RCA, and Fairchild) could serve Puerto Rico and one (Fairchild) could serve the Canal Zone. Only one applicant (Comsat) has applied for an earth station (receive-only) in Puerto Rico, and there is no pending application for the Canal Zone.

ent. Therefore, bush life is marked by a degree of physical isolation and primitiveness unknown to the rest of the Nation. Clearly, nothing short of comprehensive and inexpensive reliable communication services must be made available if the quality of life in the bush is to be upgraded and rural and urban Alaska successfully integrated.

As for the cities, urban living in Alaska's few cities does not approach nationwide standards with respect to such basic amenities as paved streets, sewer systems, and public transportation facilities. Primary industry is almost nonexistent. State unemployment and the cost of living are annually either the highest or among the highest in the Nation. Consequently, economic development is imperative. However, the prospects of such development are hindered substantially by Alaska's geographic remoteness. Therefore, the State's carriers must be able to offer comprehensive and inexpensive reliable communications service if Alaska is to overcome its geographical handicaps and compete equally with other States in the attraction of capital and industry.

95. Against the pressing need, the State maintains, present communications are either inadequate or nonexistent.[40] All who have studied the matter have indicated to the State that the existing backbone system cannot be overbuilt to meet present and projected circuit requirements. Construction of new terrestrial facilities (both between cities and to provide comprehensive bush service) would be extremely expensive because of the distance, mountainous terrain and climatic conditions involved. While Intelsat service is of some value, the high cost and restricted access preclude its being of material aid. Therefore, the provision of vitally needed comprehensive and low cost reliable communications services in Alaska is exclusively dependent upon realization of the potential inherent in a domestic system.

96. The State's communication requirements (amplified at pp. 6–7 of its comments, and pp. 5–7 of its reply comments) are fourfold: (1) Intrastate voice, message and data services; (2) interstate voice, message and data services; (3) instructional and educational television programing; and (4) commercial television. While the satellite technology has the capability to minimize the economic penalty imposed on Alaska by geographic separation from Conus, economic feasibility requires that the State be able to benefit from the high volume of traffic in all 50 States. It therefore desires to participate in a multipurpose system. The State says that at least one full-time, nonpreemptible channel must be made available for ITV/ETV programs and one audio channel for educational radio by the satellite carriers serving Alaska. While not addressing the question of the channel capacity needed for real-time commercial television, the State estimates that other current traffic of Alaska would require less than a full transponder. It would therefore prefer a demand assigned, multiaccess system to the lease of dedicated transponders on a full-time basis. As earlier indicated (paragraph 40 above), the State's analysis of pending applications tends to show that the Comsat and RCA proposals offer the best potential for accommodating its needs, though the optional features in the Fairchild proposal would be particularly attractive to Alaska.

97. In its reply comments, the State expresses concern about the possibility of initial satellite proliferation within that portion of the orbital arc suitable for service to both Alaska and Conus (94° and 124° west longitude). It requests the Commission to reserve these locations for the exclusive use of the carrier or carriers selected for service between Alaska and Hawaii and Conus (reserving room also for second generation satellites along the lines of those proposed by Fairchild), and to assign more easterly locations to those carriers serving other areas of the United States. The State also stresses the importance of small, unattended earth stations to its needs, and requests the Commission to investigate and permit the exact orbital spacing required for the employment of small earth terminals in Alaska.[41] While not disagreeing generally with CPB's position that the 2 GHz band should be authorized only for noncommercial use, the State requests an exception to permit the use of these frequencies for Alaska's special requirements for bush educational and message service. Finally, the State urges the Commission to act as expeditiously as possible in establishing domestic communications satellite facilities to serve Alaska's unique needs.

98. Very few applicants commented in any depth on the subject of service to Alaska and Hawaii. WTCI, GTE, and Hughes expressed no views (except insofar as Hughes notes that it would be easier to accommodate multiple systems in the available orbital locations at 4 and 6 GHz if not all systems were required to serve Alaska). Fairchild points out that the nature and capacity of its proposed satellites would permit the options of ITV and message service at 2 GHz to low cost terminals in remote areas (such as Alaska bush) and enable its offer of free transponder usage by earth stations supplied by others. Western Union asserts that the type of service desired by Alaska would pose technical and economic problems, though it would cooperate with a Commission decision specifying in advance the manner in which such service should be subsidized. A.T. & T. states that Alaska should share a small part of a large system in view of the State's "realistic" estimate as to current traffic. While A.T. & T. does not propose to establish earth station facilities in Alaska, it would be willing to lease one or more transponders for Alaskan intrastate and interstate traffic.

99. In its reply comments, MCI Lockheed states that, if authorized to do so, it would amend its application to provide intrastate service to Alaska as described in Appendix D to such reply comments. It claims that the proposed use of high power and 12/14 GHz frequencies would produce a relatively high signal level in Alaska, reduce the complexity and cost of earth stations, and facilitate bush service.[42] MCI Lockheed envisages the use of multiple access techniques.[43] It states further that the intrastate transponders could provide interstate service to a Conus gateway, such as Seattle, and that additional 12/14 GHz transponders could link major Alaskan cities with all of Conus at distance insensitive rates—a policy to which MCI Lockheed is firmly committed.

100. The RCA applicants, who have applied for Alaskan earth stations,[44] urge that there is room for only one carrier in Alaska. They note that Alaska has a land area of some 586,000 square miles (larger than the 3 largest Conus states combined), a difficult and rigorous terrain and climate, and a 1970 population of only about 302,000 persons. These factors place a burden on any carrier charged with the responsibility of providing service there, and at the present time the Alaska network falls short of Conus standards. RCA Alascom, which just recently acquired the long lines system from Alaska Communications System, has undertaken to achieve major expansions and improvements in service and rate reductions. The revenues and return in Alaska are smaller than in Conus, and unit costs would be lower if it were part of a multipurpose system serving other States. The interposition of a carrier's carrier would only add costs. It is estimated that approximately 70 percent of RCA Alascom's toll telephone service would use satellite facilities by 1978. Any substantial diversion of revenues to other carriers or systems, or fragmentation of the RCA Alascom market, would pose a severe threat to the future of public communications in Alaska. Alaska requires more extensive intrastate satellite facilities than other States, but the potential market is far too small to support more than a single satellite system. An authorization to the RCA applicants would relieve other applicants from the obligation of serving Alaska, and remove certain constraints on their proposals (such as the selection of orbital locations capable of serving Alaska, and the need for spot beams to illuminate Alaska). They urge the Commission to reserve the orbital locations between 114° and 126° west longitude for their system, since other systems not serving Alaska could use locations farther east.

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[40] The State points out that the existing backbone communications system in Alaska is primarily composed of tropospheric scatter and microwave facilities owned and operated by the Air Force and designed to meet military requirements. Capacity allocated to meet civilian requirements is generally filled and during peak periods is subject to serious delays. Interstate Communications with Conus are provided by routes through Canada, a submarine cable, and via the Intelsat system to the Bartlett earth station. Service to rural Alaska is either nonexistent or via H–F radio. The proposed combination thin route microwave-VHF telephone system of RCA Alascom to a number of rural villages will, when installed, "rise to only a degree above emergency-type service."

[41] In this connection the State further suggests that higher values of EIRP would enhance the opportunity for using small, low cost earth terminals in Alaska.

[42] MCI Lockheed asserts that a 10-foot diameter earth station capable of providing 12 duplex voice circuits plus one television receive channel, would cost approximately $150,000. A bush station, with 2 voice channels plus television receive capability, is estimated to cost about $75,000 or less in quantity. For larger communities, a 32-foot earth station with up to 240 voice circuits plus television transmit capability would cost approximately $800,000.

[43] It is asserted that up to 20 locations could transmit to a single satellite transponder, and up to 240 duplex voice circuits per transponder could be provided. Segments of transponder passband would be allocated to up-link transmissions from specific cities. Communications circuits between any pair of large communities could be established upon demand by means of automatic signaling equipment located in the various earth stations. In addition, a number of transponder slots could be reserved for "party-line" voice communications from very small communities to major population centers such as Anchorage or Fairbanks.

[44] The RCA applicants have applied for and intend to use four major earth stations in Alaska as a link with the Bartlett earth station and to supplement terrestrial facilities in Alaska. Such facilities would allegedly provide growth up to 50 percent or more of the total interstate and intrastate requirements of Alaska, and would permit significant reductions in the cost of constructing additional terrestrial microwave facilities (estimated at $7.5 million in the first 4 years after implementation of the system). In the event that negotiations with the Government lead to firm agreements, they would apply for nine additional earth stations in Alaska. Moreover, if their proposed system should obtain network program transmission, they envision that 250 of the 370 total proposed receive-only stations would be located in Alaska. They assert that the comments of the State underestimate the traffic potential.

101. The RCA applicants further claim that RCA Alascom is the only entity legally qualified to provide intrastate service in Alaska, since it alone allegedly possesses the requisite franchise authority from the State. Comsat, the only other applicant for Alaskan earth stations, generally takes the position that it should have a monopoly grant for all areas. Otherwise, it did not comment on the question of service to Alaska, except to dispute the latter claim by the RCA applicants. Comsat states that RCA Alascom does not have an exclusive franchise for Alaska. While the Alaska Public Utilities Commission noted that the market was then too thin to warrant general authority to more than one land lines carrier, it did not purport to foreclose the possibility of competing applications to provide some form of land lines service that future circumstances might permit. While approval by State authorities may be necessary at some stage for intrastate operations, it is not prerequisite to a Commission policy determination. The reply comments of the State of Alaska support Comsat's position on the legal issue, though this "should not be construed as disfavor with the merits of the [RCA] applicant's satellite proposal."[45]

102. As previously indicated, Hawaiian Telco—one of the applicants for an earth station in Hawaii, takes the position that Hawaii should not be part of any domestic system at this time. It states that over half of the traffic between the United States and the Pacific consists of Conus-Hawaii traffic. The transfer of existing traffic from the Intelsat system to a domestic system would allegedly cause a loss to Comsat of about $10.3 million in annual revenues and a proportionate loss to Intelsat. Moreover, none of the system applicants has shown a need for any additional service to Hawaii at this time. An Intelsat IV satellite over the Pacific would be capable of providing broadcast program distribution service equal to that proposed by domestic applicants, and should make it possible for Comsat to have competitive rates. Further, a submarine cable system with capacity of 845 circuits is planned for 1973, and another cable with capacity of 3,500 circuits is planned for 1977. The Commission should consider service to Hawaii as part of the satellite-cable mix problem. Hawaiian Telco also asserts that Western Union's application is barred by section 222 of the Communications Act, and should not in any event be granted in preference to that of Hawaiian Telco for technical and economic reasons. Hawaiian Telco states that it would cooperate with the Western Union system and any carrier serving Alaska.

103. A.T. & T. shares the view of Hawaiian Telco that diversion of mainland traffic to domestic facilities would have undesirable effects on the global system insofar as Hawaii is concerned. Though Comsat has applied for earth stations in Hawaii, Alaska, and Puerto Rico, its comments do not reveal any views on the question of whether satellite service to these areas should be by means of the Intelsat system, domestic facilities or some combination of both. Western Union denies that it is disqualified under section 222, and also claims that there is no basis for Hawaiian Telco's suggestion that an Hawaiian earth station would create frequency congestion. It asserts that Hawaiian Telco has cited no instance of interference. The RCA applicants claim that exclusion of Hawaii would work a substantial hardship on that State in terms of available services and rates. They claim that a major social value would be accomplished through bringing full live network interconnection to Hawaii, which alone would more than justify the relatively minor impact on international service, and that Hawaii would benefit by being provided with public and instructional radio and television on a fully interconnected basis at the same free or reduced rates applicable to such service in other States. The RCA applicants have no objection to ownership participation by Hawaiian Telco in their proposed earth station.

104. After the comments and reply comments of the applicants and other parties were filed, the State of Hawaii requested and was granted leave to file comments on or before October 21, 1971. The State of Hawaii disagrees with the position that Hawaii should not be part of a domestic satellite system at this time. It asserts that the people of Hawaii and Alaska are now treated in many ways unequally when compared with other states in that:

(a) Rates between Hawaii and the Western States are allegedly more than double mainland rates for service between the most remote locations within Conus;

(b) Rates between Hawaii and the mainland and between Hawaii and Alaska are nearly as high as, for example, Hawaii to Japan rates;

(c) Hawaii is not included in the present low mainland rate-averaged night rates which are essentially independent of distance;

(d) Hawaii is not provided Wide Area Telephone Service (WATS) or direct distance dialing by subscribers; and

(e) Television transmission and specialized communications service for transmission of data, facsimile and record traffic are so costly to the user as to severely restrict their use.

105. According to the State, domestic satellites can provide communications transmission at costs no longer related to distance and can afford Hawaii direct linkage throughout the United States. Hawaii's domestic traffic is far larger than its foreign traffic, and is increasing rapidly. It is not equitable, the State believes, that citizens of Hawaii in using interstate communications must carry a heavier burden than other U.S. citizens for making Comsat or Intelsat workable and profitable and for supporting cost-averaged international communications. The State of Hawaii says: "These objectives are national and the responsibility for achieving them should be shared equally by all." Further, unlike proposed new cable facilities linking Hawaii with California, communications via domestic satellite would no longer need to transit the contiguous States in linking the continental hinterlands and East Coast with Hawaii. The early provision of domestic satellite service for Hawaii could permit a postponement of additional cable facilities until such time as higher capacity, advanced technology cable is available which would afford economy of scale and resultant reduced circuit costs.

106. While the State of Hawaii is of the opinion that none of the applicants has adequately treated the question of effective service to Hawaii, it requests the Commission to require that licensees include interstate service for Hawaii (accommodating two-way voice, record, data and video transmission) and that Hawaii be included in any satellite distribution of television network programing (including commercial, public broadcasting and CATV).[46] The State further requests that licensees in advanced system planning be required to recognize the need for incremental and incentive pricing of satellite transponder capacity to permit economically viable interisland communications, and that special low-cost rates for interconnection of educational institutions and public broadcast stations, including those in Hawaii, be approved on the basis of incremental cost (see paragraph 91 above). Finally, the State of Hawaii requests the Commission to take needed steps to include facilities serving Hawaii in domestic rate making and rate averaging.

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[45] The RCA applicants assert that Comsat's plan is principally concerned with earth stations and circuits, and provides no indication of a thoughtful approach as to how circuits would be operated for two-way communications in the nationwide network or how the system would work with existing local telephone companies in Alaska. They state that Comsat's proposal could be viewed as relating only to private line service and should not be authorized without regard to message telephone. On this, the State of Alaska comments:

"A satellite carrier acting as a 'carrier's carrier' presumably would not be engaged in general long lines authority or offer services directly to the consumer. Clearly, such a carrier would not be a competitor of Alascom for Alaska traffic. It is therefore the State's contention that the authority granted by this Commission to construct and operate satellite facilities in Alaska would not fragment Alascom's system or divert any traffic from the long lines carrier to the extent envisioned by RCA."

[46] In the latter connection, the State observes that while mainland public broadcast stations will soon be served by low-cost video interconnection, Hawaii's public broadcasting stations will remain unserved and its citizens must, nevertheless, pay taxes to support the Corporation for Public Broadcasting. The State further notes that though ranking in the top 100 television markets, it is still largely dependent on the physical transport of video tapes and films and desires commercial program distribution via satellite to improve program diversity and timeliness. Moreover, Hawaii will soon have CATV service available to a majority of the population and thus is favorable to proposals including multichannel CATV programing via satellite.